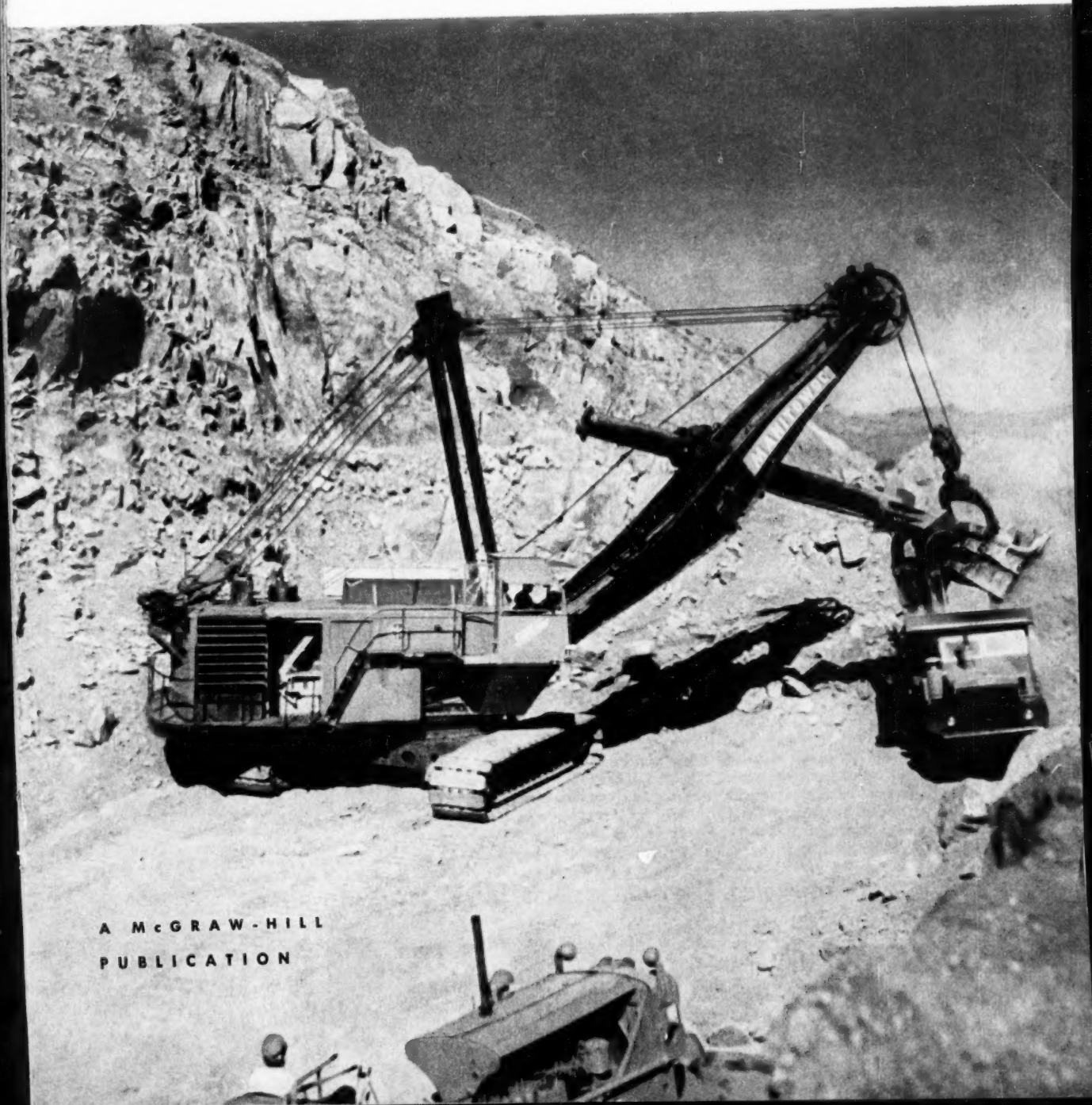


35 CENTS

CONSTRUCTION

METHODS AND EQUIPMENT

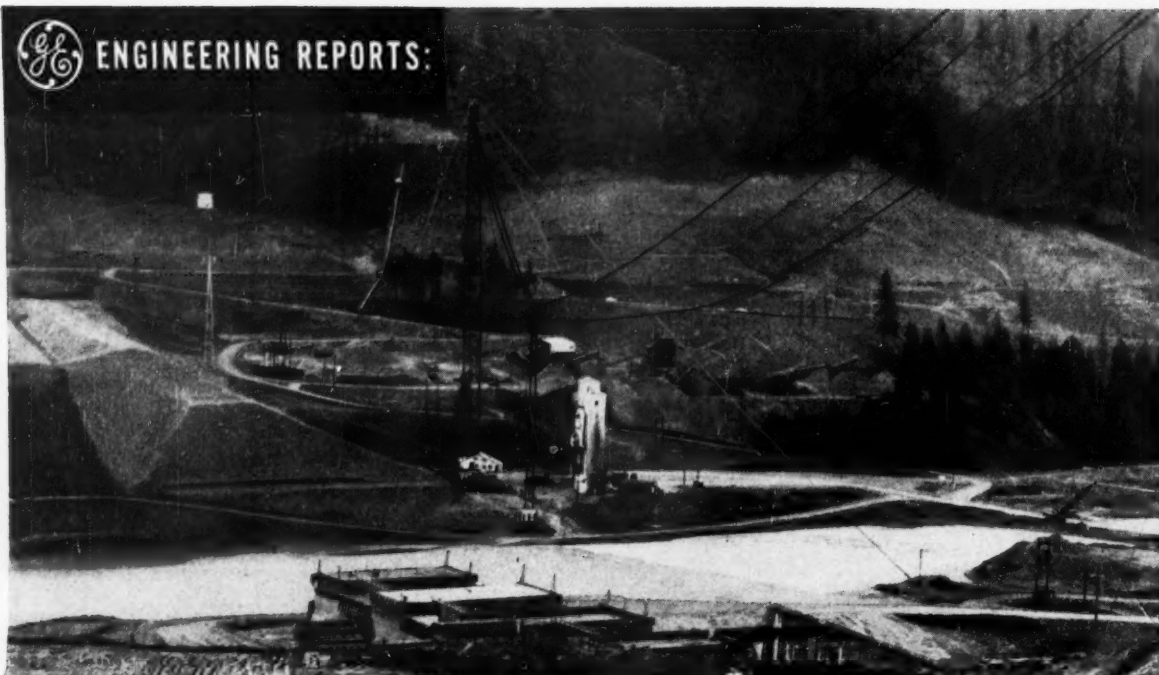
January 1953



A MCGRAW-HILL
PUBLICATION



ENGINEERING REPORTS:



800,000 YARDS OF CONCRETE will be needed to complete Lookout Point Dam on the Willamette River near Lowell, Oregon. G-E powered cableway—2600 feet long with 25-ton

hook capacity—is of radial type, with stationary 428-foot-high head tower and movable tail tower. Maximum conveying speed is 1800 fpm, maximum hoisting speed is 470 fpm.

Complete electrification keeps Lookout Point on schedule

Morrison-Knudsen selects G-E drives to batch and place concrete at Oregon dam

To meet a tight work schedule at the Corps of Engineers' Lookout Point Dam, the Morrison-Knudsen Co. relies on modern construction equipment—electrified throughout by General Electric. This equipment, spearheaded by a Travelift cableway built by Construction Improvements Ltd., and Lidgerwood Industries Inc. is helping to place an average of 2000 yards of concrete per day.

Lookout Point, an earth-and-gravel-fill dam located at Lowell, Oregon, is a combined flood-control and power-generation project scheduled for 1953 completion. To heavy construction people, it provides one more example of the effective use of *electrified* equipment on jobs where smooth, dependable operation is an everyday "must."

Whether you buy or build construction equipment, you'll find it's safer, more flexible, and more efficient when electrified by G.E.—with skilled engineering help in application, installation, and service. Find out how this equipment and service can pay off for you by contacting your nearest G-E Apparatus Sales Office. General Electric Co., Schenectady 5, N. Y.

664-25



CABLEWAY is driven by this G-E 500-hp, 2300-volt wound-rotor motor. G-E drives also power conveyors, rock crushers, and batch-plant equipment.



CENTRALIZED CONTROL equipment for cableway includes (left to right) Limitamp high-voltage primary panel, secondary control, and cast-grid resistors.

Engineered Electrical Systems for Heavy Construction

GENERAL  **ELECTRIC**

B.F. Goodrich



Partner C. A. Schwoppe and Gen. Supt. O. D. Pierce of Schwoppe Bros. examine a BFG tire.

Tires can be recapped 2 and 3 times— save contractor 30% on tire costs!

MORE than 70 trucks, tractors, shovels, scrapers and other units are used for earth moving and construction work by Schwoppe Brothers, San Antonio, Texas. The picture shows one of the company's machines at work on the San Jacinto Dam project, where a wilderness is being converted into a five to six thousand foot reservoir to serve Houston's water needs.

You'd expect rugged operations like this to shorten tire life greatly. Yet the B. F. Goodrich Universal tires above have rolled three years without ever being off the rim! And Schwoppe Bros. gets similar service from all its BFG tires: over 65,000 miles—and still going strong—on units hauling heavy construction equipment; more than

8,000 hours on off-the-road machinery.

Even after service like this the company is still able to recap BFG tires two and three times for a 30% saving on tire costs. No wonder Schwoppe Bros. uses B. F. Goodrich tires exclusively and Partner C. A. Schwoppe says they "often represent the difference between profit and loss".

The patented nylon shock shield is the reason why BFG tires cut costs. Layers of strong, elastic nylon cords stretch together under impact to protect the tire body from smashing shocks and bruises. This nylon shock shield saves you money 4 ways:

(1) more recappable tires and more hours of service per recap (2) increased original hours of service (3) greater

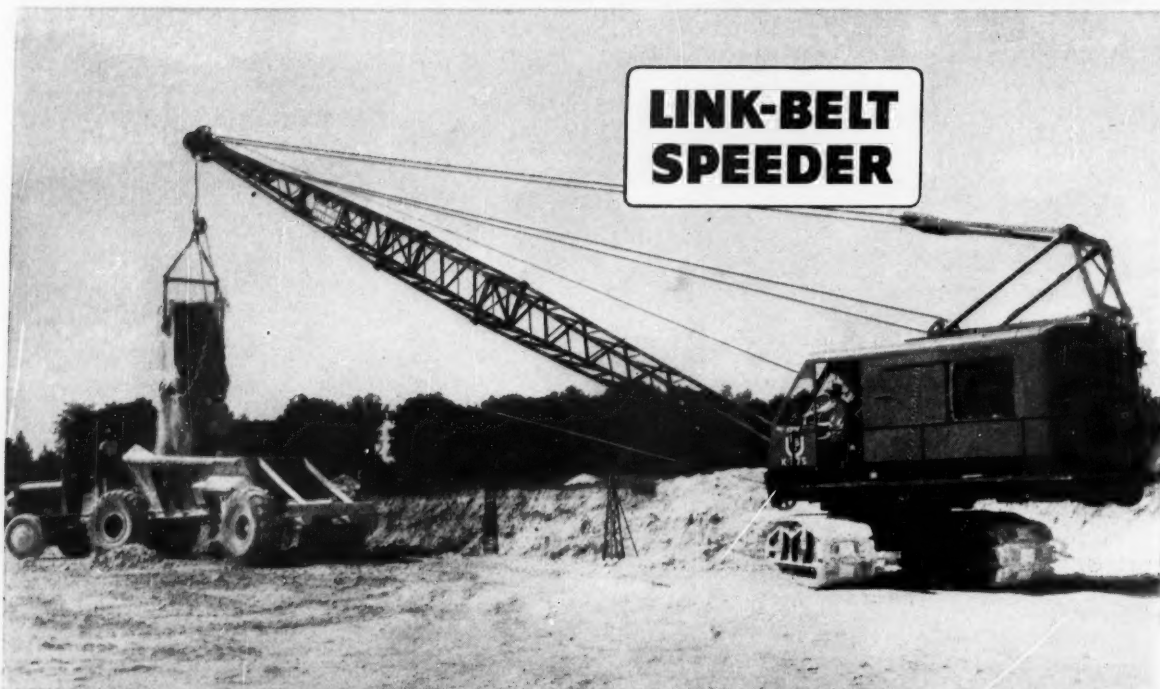
bruise resistance (4) less danger of tread separation. The exclusive shock shield—which costs you nothing extra—is built into all tires of 8 or more plies. *Double shield* in larger sizes.

B. F. Goodrich makes a complete line of money-saving off-the-road tires. See them at your BFG retailer's store. You'll find the address under Tires in the Yellow Pages of your phone book. *The B. F. Goodrich Company, Akron, O.*



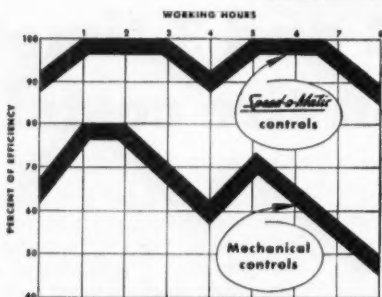
Before you buy:

CHECK EARNING POWER!



POLK CONSTRUCTION CO., Lakeland, Fla., reports they are "extremely pleased" with performance of this K-375, quarrying limerock.

Speed-o-Matic controls pay off in greater output and lower maintenance



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Link-Belt Speeder's power-driven hydraulic controls reduce operator fatigue, minimize wear and tear on the machine and require far less maintenance than rigs with manual, air, vacuum or other control systems.

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13,000

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Catalogs are available on request to Macwhyte Company or authorized distributor.

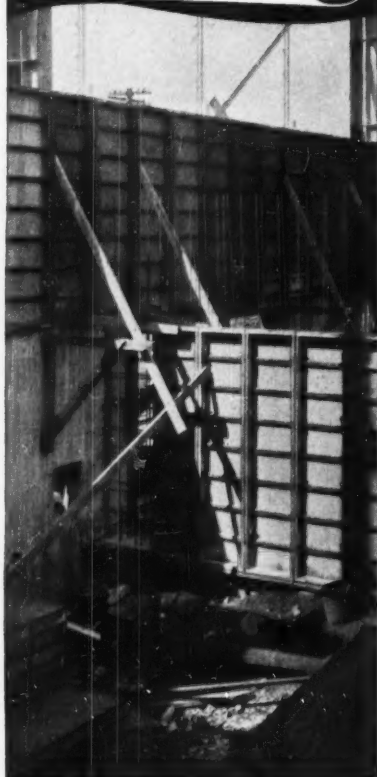
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CONSTRUCTION METHODS AND EQUIPMENT

Volume 35, Number 1

JANUARY 1953

Established 1919

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Robert K. Tomlin was appointed editor of CONSTRUCTION METHODS in January 1928, was succeeded by Waldo G. Bowman in January 1946, and by Harold W. Richardson in February 1949.

January 1953

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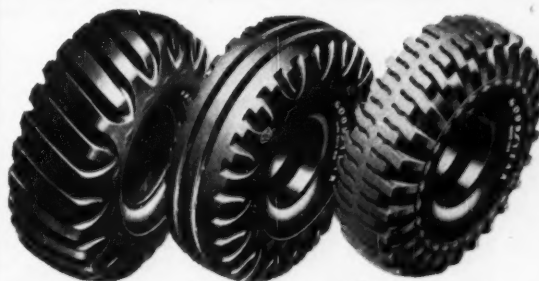
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by Cutting Time per Yard



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What's happened to the 500 ft. compressor everyone used to build?

It's gone — completely obsoleted by the "new standard" 600 ft. size introduced by Jaeger in 1946.

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Today, 125 ft. compressors (the size Jaeger originated to replace the 105) are being sold in Canada under 4 well-known American names. Here, in the U. S., new 125, 185, 250 and 365 ft. compressors (the new sizes Jaeger has been building for 5 years) have begun to be announced.

The facts, and the choice, are clear:

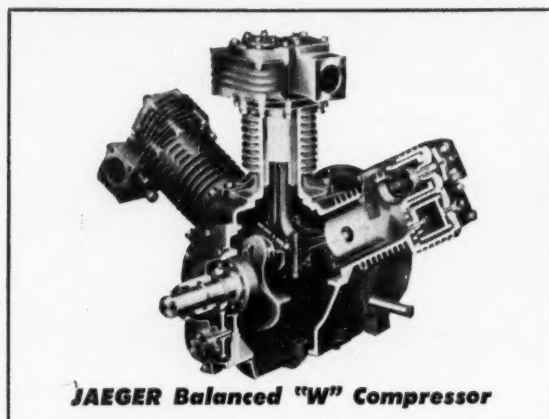
- 1: All 60, 105, 160, 210 and 315 ft. portable compressors are today as out-of-date as the old 500 ft.
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For complete information, ask your Jaeger distributor or write for Catalog JC-1.

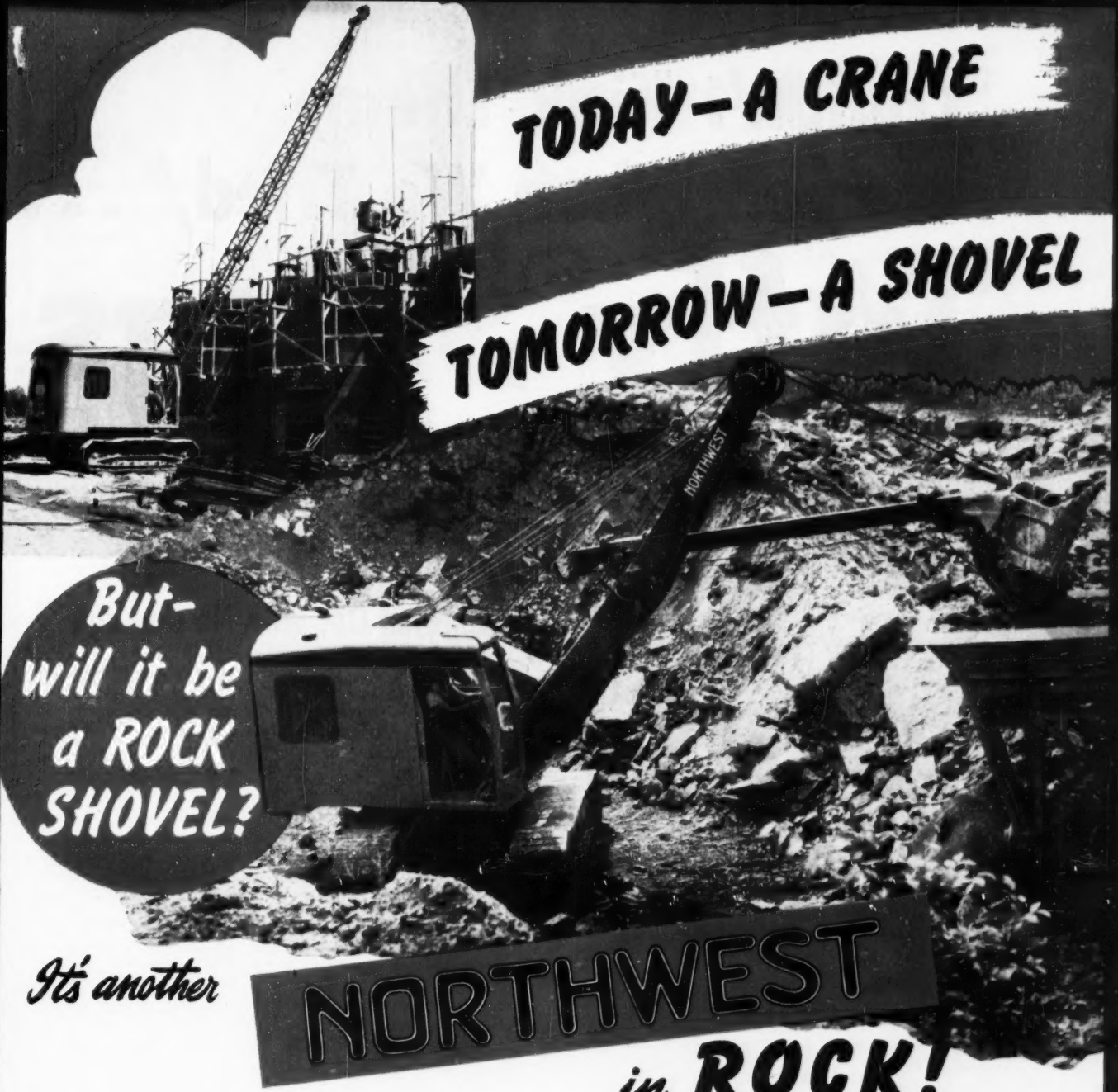


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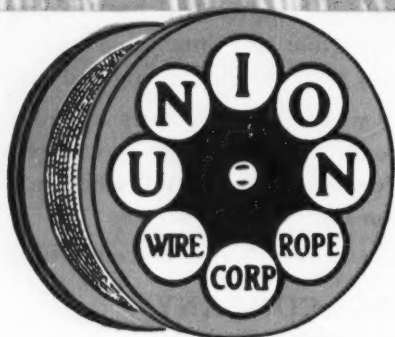
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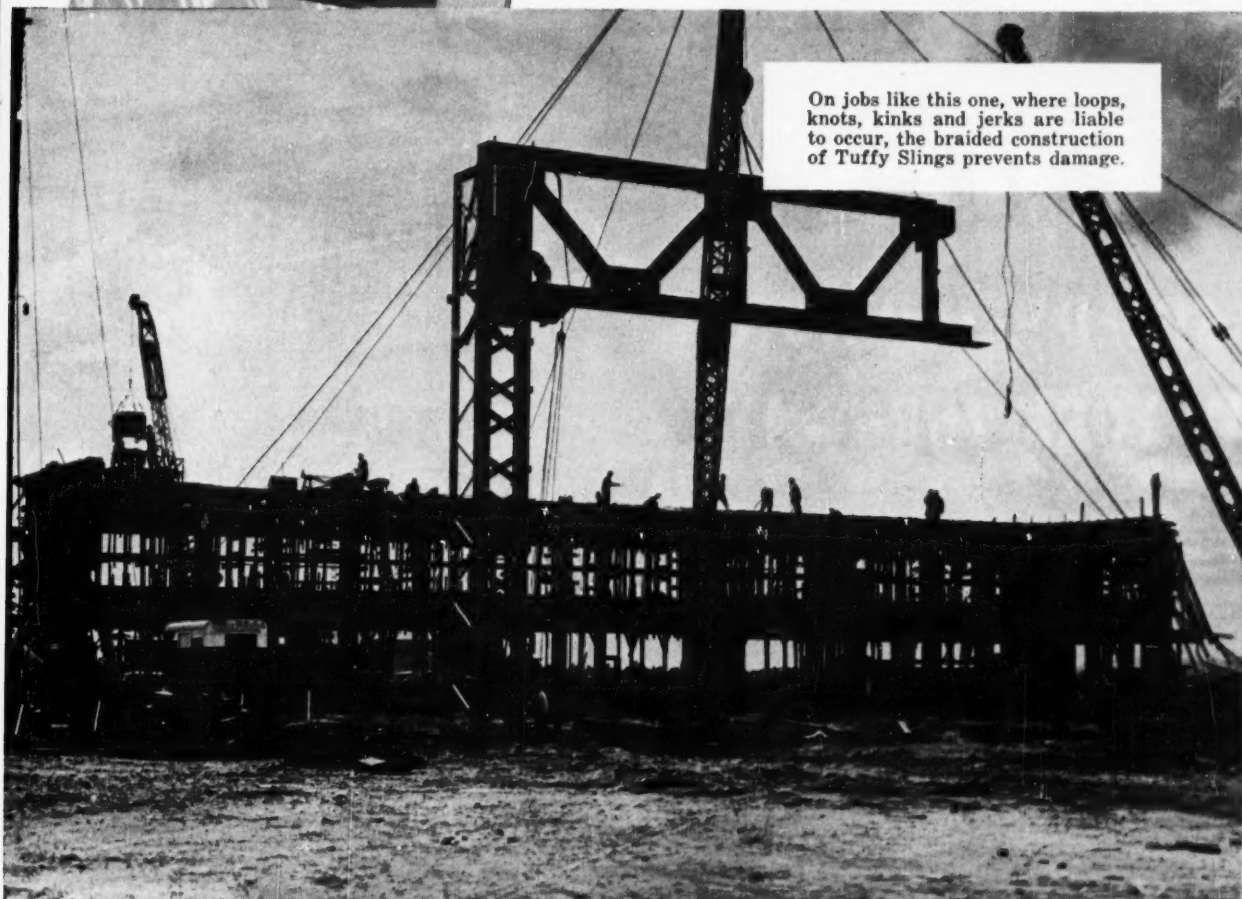


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All types of Euclid equipment—Scrapers, Bottom-Dumps, Rear-Dumps and Loaders—are speeding the grading on this job... hauling bigger loads, faster, and at low cost... providing dependable service at low maintenance cost under the toughest conditions.

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1. Scarify old surface, using motor grader or ripper.
2. Grid Roll chunks without removing from roadbed. An average of 10 passes at 5 miles per hour reduces chunks to the original, loose aggregate mixture.
3. Windrow the salvaged material and load it out with scrapers, conveyor-type loaders, or other conventional equipment.
4. Re-lay salvaged material on properly prepared new roadbed (or stockpile, if desired).

5. Add small amount of binder to salvaged material (amount required varies with condition of binder remaining in salvaged aggregate).
6. Roll new surface (composed of salvaged material) using Hyster Grid Roller.
7. Apply seal coat, if desired.

When maintaining or rebuilding worn-out roads, the procedure is the same except for point No. 3; instead, salvaged material is windrowed on shoulder and the Grid Roller is used to compact and prepare sub-base.

Ask your Caterpillar-Hyster dealer for information about the new Hyster Grid Roller, or write for catalog.

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— use *Texaco Ursa Oil X***. It's fully detergent and dispersive, keeps engines clean for lower fuel consumption and maintenance costs. In crawler mechanisms, use *Texaco Track Roll Lubricant* for ideal protection against dirt, water and wear.

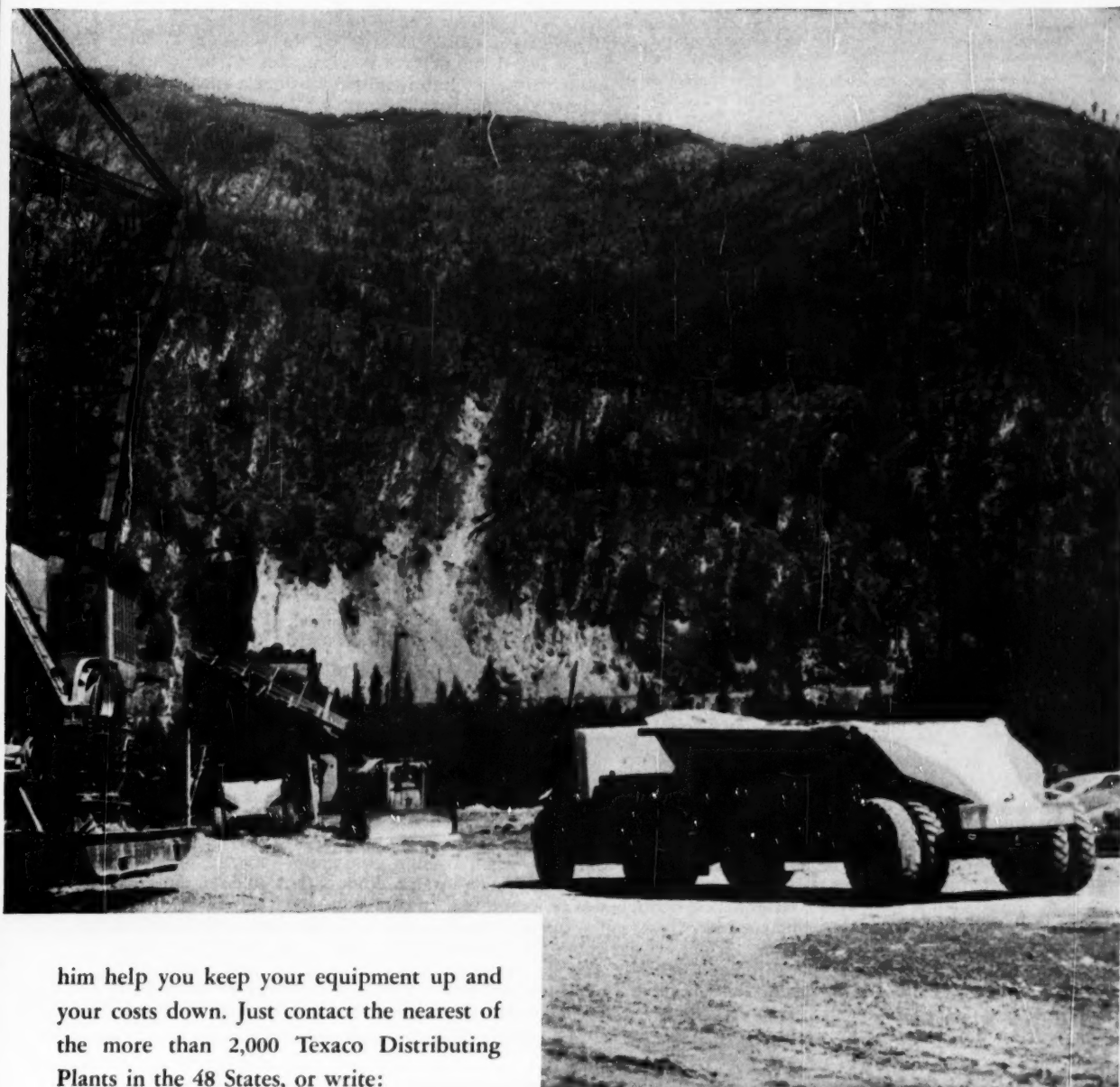
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on television
Tuesday nights.
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Saturday afternoons.



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him help you keep your equipment up and your costs down. Just contact the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

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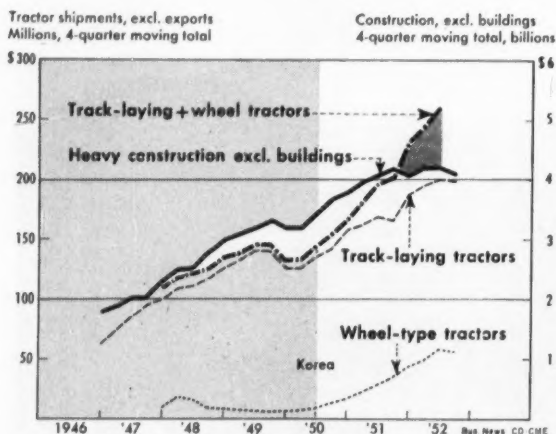
The Texas Company, 135 East 42nd Street,
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HOW TRACTORS climb with the construction curve

Construction Looks Good for 1953

CONSTRUCTION ROUNDED OUT 1952 with the largest volume in its history, an estimated whopping \$32.3 billion. All signs point to a continued boom throughout 1953. The Labor and Commerce Department estimates estimate the '53 total at \$33.5 billion, a 4% gain, with every type of construction holding its own or showing an increase except industrial building, which is expected to drop from \$2.3 billion to \$1.7 billion. Predictions for private construction total \$22.2 billion; for public works, \$11.3 billion.

Our own Business News Department contract award figures, which exclude small residential, farm and conservation work, and all projects under certain minimum amounts, totaled \$15.8 billion for last year. This department predicts a drop of 6½% for 1953 due entirely to a tremendous drop in AEC projects, from \$2.5 billion to \$700 million scheduled for 1953. Otherwise, heavy, highway and building work is expected to increase 6% this year. Brightest spot in this year's picture is highway construction, slated for an increase of 23½%.

Our backlog of authentic planned projects, representing the pent-up demand for construction, now stands in excess of \$68 billion, an increase of \$6½ billion during the last year despite heavy siphoning

off by large contract awards. Of this backlog, 27 billion is listed for private construction, 41 billion for public works, excluding military projects except those definitely announced.

HOW ABOUT PRICES? Not much change expected. Here's how our company economist, Dexter Keezer, looks at the future price situation: "Actually, high labor costs have put a floor under industrial prices which probably is not much below the present level. . . . Industrial prices are not likely to show much decline. Prices of machinery and other highly fabricated products are likely to rise during the early months of 1953. . . . Construction costs are expected to be stable. Materials prices, on the average, will probably trend a bit lower. But labor costs are likely to go up again. . . . For better or worse, relatively high costs and prices are likely to be with us for another year. A drastic correction like that which occurred in 1929 or 1949 is not in sight for 1953."

ANOTHER BIG MERGER in the construction supply field is the purchase of John A. Roebling's Sons Co., of Trenton, N. J., by the Colorado Fuel & Iron Co., of Pueblo. Scant information received so far indicates that Roebling will be operated as a wholly owned subsidiary of CF&I.

Do Tractors Follow Construction?

TWO MONTHS AGO we published some charts plotting construction equipment shipments against contract awards in an effort to determine if there was a related pattern involved. We have broken the equipment factor down further this month by showing herewith crawler and wheel (off-highway type) tractors stacked up against contract awards. Notice how tractor shipments seem to follow construction awards fairly close up to mid-year 1951. Then, apparently when tractor production stepped up in an effort to make up for demand, shipments shot upwards in relation to contracts, but still held close to the up-and-down pattern. These charts are based on domestic shipments only. But for the last three years, 30% of crawler-tractor production and about 22% of big-wheel tractors have gone overseas. Shipments for American-built bases and military use are classified under exports.

SOME BIG CONTRACT AWARDS OF THE MONTH

Guy F. Atkinson Co., 9210 N.E. Halsey St., Portland, Ore., both substructure (41 piers) and superstructure (cantilever steel) for Columbia River Bridge at The Dalles, Ore., for Wasco County, \$2,478,479.

Metropolitan Paving Co., 300 S. Indiana St., Oklahoma City, Okla., airport runways at Altus, Okla., for U. S. Engineers Tulsa District, \$2,857,597.

Robert E. McKee, Inc., 4700 San Fernando Rd., Los Angeles, Calif., health and receiving hospital for city of Los Angeles, \$3,665,100.

Hagerman Const. Co., 403 E. Superior St., Ft. Wayne, Ind., women's residence hall for University of Indiana, Bloomington, \$4,268,884.

Duval Eng. & Const. Co., 1746 E. Adams St., Jacksonville, Fla., airport

paving for U. S. Navy at Brunswick, Ga., \$2,147,312.

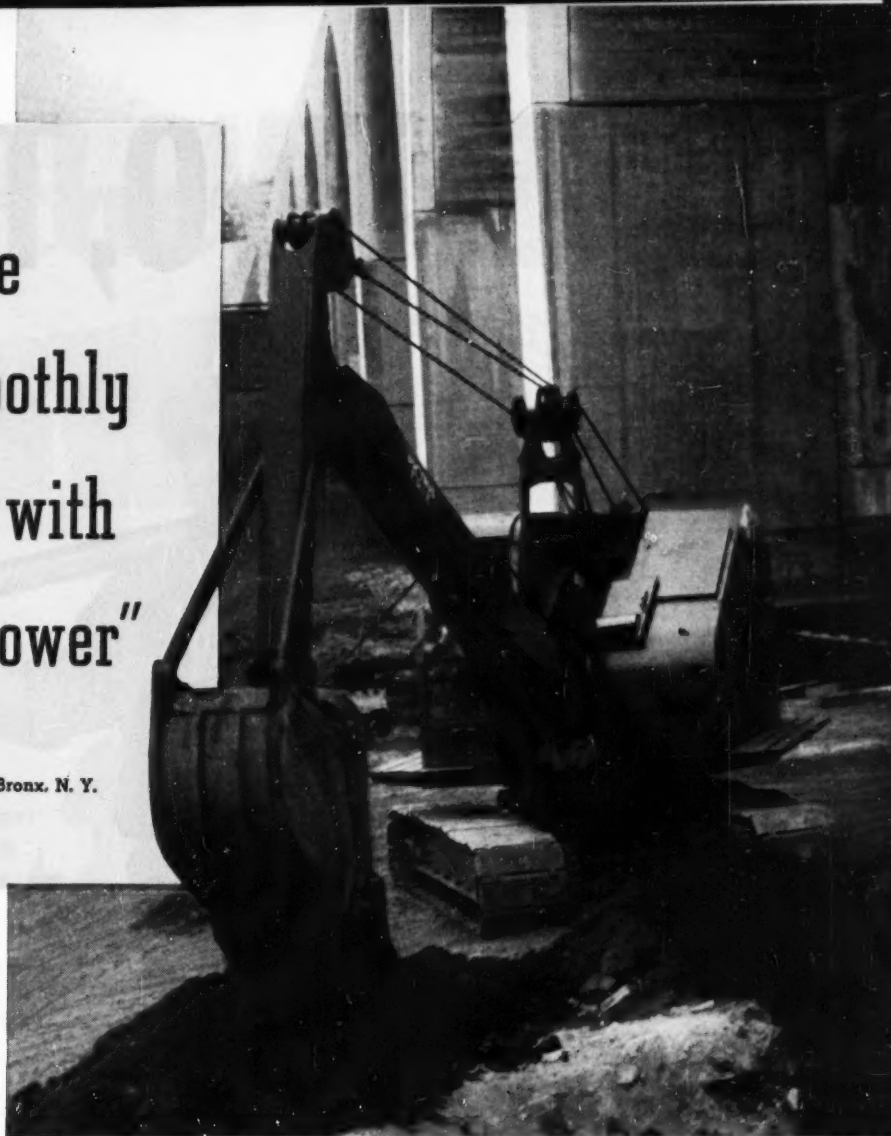
Arnold Const. Co., Box 515, 22nd St. Sta., St. Petersburg, Fla., 58th St. High School for St. Petersburg, \$1,287,577.

Maxey & Leftwich, Box 108, Lubbock, Tex., ammunition storage depots for Hastings (Neb.) Ammunition (Continued on page 20)

**"This machine
operates smoothly
and fast with
CAT D318 power"**

J. McKINLEY, Foreman

Civetta Excavating, Inc., Bronx, N. Y.



This Bucyrus-Erie back-hoe with $\frac{3}{4}$ -yard bucket is excavating for a storm sewer on a two-lane highway joining the new Bronx River Parkway extension. The section you see here had to be cleared quickly, as machine and trench blocked access for trucks loading spoil. They weren't held up long. The section was cleared on the double. J. McKinley, Foreman for Civetta, sums up the reason in ten words: "This machine operates smoothly and fast with Cat D318 power."

Whether the pressure's on or you're doing a routine job, you're money to the good with Caterpillar Diesel Engines in your equipment. They're downright cheap to run, using No. 2 furnace oil without fouling. And they won't hold you up with costly down-time. If they ever need attention, you can get it fast and efficiently from your nearby Caterpillar Dealer.

Next time you're replacing or buying power, specify Cat Diesels. Leading manufacturers can furnish them in the machines they build. Engines are available to 500 HP — Electric Sets, to 315 KW. They're honestly rated — you can count on them to deliver all the power they promise. For complete facts about these sturdy, money-saving Diesels, see your Caterpillar Dealer.

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EARTHMOVING EQUIPMENT**

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Yes, only three quick, easy steps are required to set an Acrow Shore. Acrow's flat type head fits any size stringer. No redesigning of formwork is necessary.

When it comes to stripping, Acrow is faster, too. Just a twist of the collar handle and Acrow Shores are down, ready to telescope compactly. Collar threads are cleaned automatically during the stripping operation through Acrow's exclusive self-cleaning feature.

Acrow Shores are available with standard head 6" x 6"; beam type, 14" x 4"; or J head, 14" x 4". Working ranges ... 3' 4" to 15".

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2



3

IN ONE MINUTE . . .

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10 CU. YDS.

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loaded by *Athey* Hi Loader

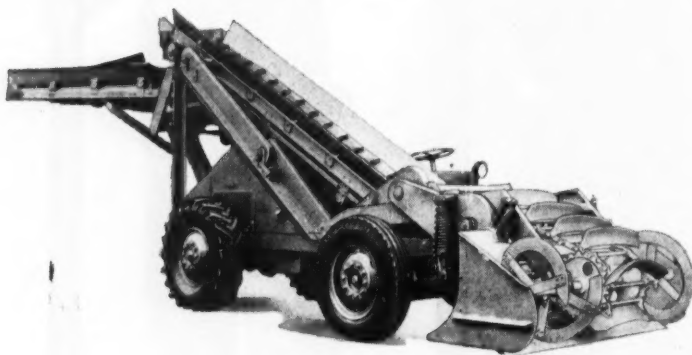
Sand, snow, stone or soil—whatever material you move will get the fastest handling you've ever seen with an Athey 125 Hi Loader!

This versatile rig — built with a ruggedness that assures trouble-free service — digs in at speeds up to 2 MPH. Hi-Carbon Steel feeder blades — fed by augers that reach out four feet from center — paddle the material onto the heavy-duty cleated conveyor belt. Feeder blades and augers float freely to ride up and over piles — eliminating slow-downs caused by jamming, crushing, bulldozing.

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MAIL THIS COUPON — TODAY!

IT'S YOUR BUSINESS . . .

Continued from page 16

Some Big Jobs of the Month

tion Depot, for Ninth Naval Dist., \$4,198,000.

Shelby Const. Co., 1106 Canal St., New Orleans, La., 572 housing units for Memphis, Tenn., Housing Authority, \$4,258,630.

United Engineers & Constructors, Inc., 1401 Arch St., Philadelphia, Pa., Hydro plant on Housatonic River, New Milford, Conn., for Conn. Lt. & Power Co., \$10,000,000.

Michigan Sewer Const. Co., 21720 W. 8 Mile Rd., Detroit, Northwest Interceptor Sewer for Detroit Dept. of Public Works, \$5,333,839.

Blaw-Knox Const. Co., 930 Duquesne Way, Pittsburgh, Pa., phenol plant at Chicago for Catalan Corp. of America, \$3,750,000.

Webb & Knapp Const. Co., 270 Park Ave., New York City, 22-story office building at Denver, Colo., for Ritz Carlton Realty Co., \$15,000,000.

Daniel Const. Co., 429 N. Main St., Greenville, N. C., synthetic fiber plant near Hopewell, Va., for Allied Chem. & Dye Co., \$23,000,000.

Western Contracting Corp., 400 Benson Bldg., Sioux City, Iowa, Stage IV earthwork, Ft. Randall Dam, S. D., for U. S. Engineers Omaha Dist., \$4,333,468.

Morris Cafritz, 1404 K St., N. W., and Chas. H. Tomkins, 907 16th St., N.W., Washington, D. C., community of offices, apartments and shopping center at Washington, \$26,000,000.

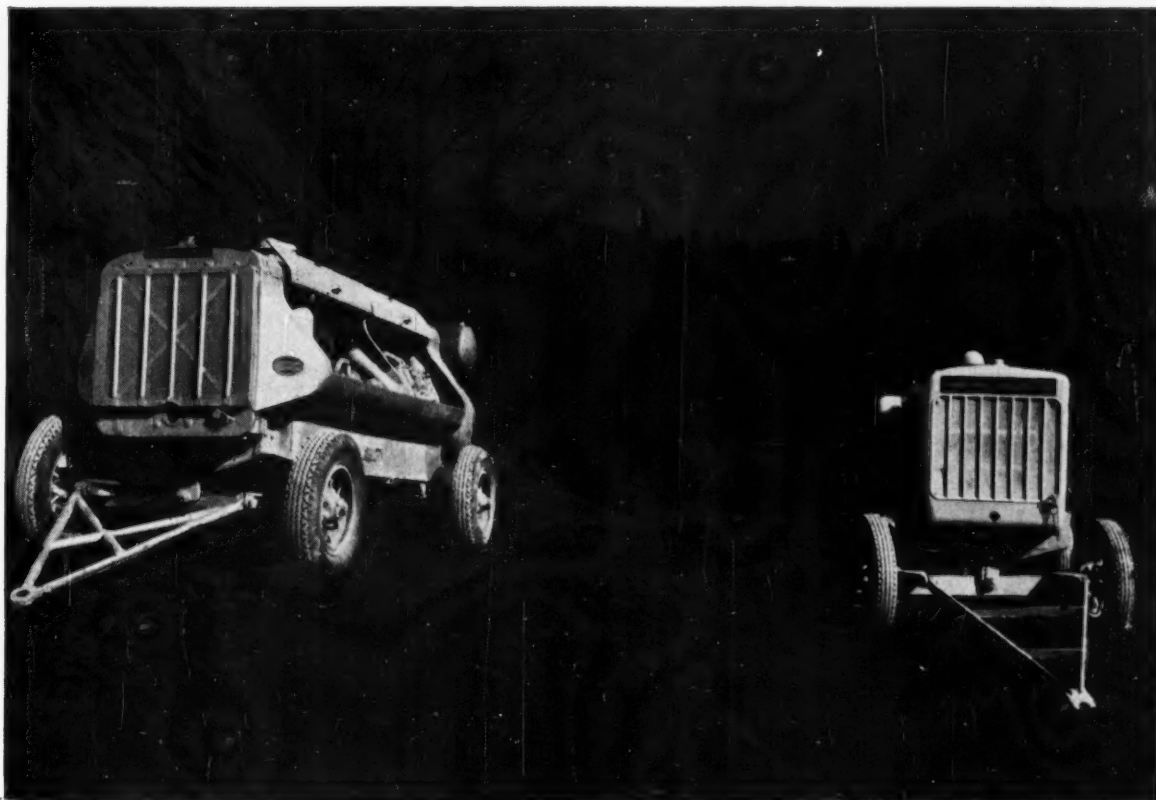
Bechtel Corp., 3750 Wilshire Blvd., Los Angeles 5, Calif., catalytic reformer at Torrance, Calif., refinery for General Petroleum Co., \$10,000,000.

W. E. Wood Co., 4649 Humboldt St., Detroit, Mich., booster stations and underground reservoirs for Detroit Water Commission, \$2,125,000.

United Engineers & Constructors, 1401 Arch St., Philadelphia, phenol plant for Monsanto Chemical Co., at Avon, Calif., \$5,000,000.

Tecon Corp., 1201 Main St., Dallas, Tex., runways, etc., at Sedalia Air Force Base, Sedalia, Mo., \$5,947,363.

Al Johnson Construction Co., Foshay Tower, Minneapolis, hydro power plant at Blakely Mountain Dam, Ark., for Vicksburg, Miss., District U. S. Corps of Engineers, \$4,899,815.



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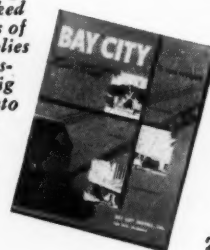
Yes, a comparison of the brief, essential specifications listed here will prove that dollar for dollar the BAY CITY heavy-duty $\frac{3}{4}$ yard Model 45 is the biggest value in excavating and material handling equipment. This is only part of the story—consider the design features for full convertibility—keep in mind the operating advantages that assure snappy swing, quick control, easy operation and fine balance. Make your comparison NOW, then ask for catalog. BAY CITY SHOVELS, INC., Bay City, Michigan.

SPECIFICATION	BAY CITY Model 45	Other $\frac{3}{4}$ Yd. Shovels
Weight (as shovel)	46,500 lbs.	
Power (std. gas)	81 HP @ 1200 RPM	
Engine Displacement	517 cu. in.	
Shovel Boom	19' 0"	
Crowd	One Piece Chain	
Digging Radius 45°	28' 1"	
Crane Boom (Std.)	35' Pin-connected	
Crane Capacity, 10' Rad.	28,500 lbs.	
Hoe Boom	20' 0"	
Digging Depth	19' 6"	
Bases	Cast Alloy Steel	
Crawler Bearing Area	24" Shoes—5930	



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Get this 20 page catalog, packed with pictures of parts, assemblies and jobs illustrating the big value built into this $\frac{3}{4}$ yard crawler machine. It's yours for the asking.



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*and at the lowest cost per cut



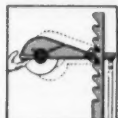
LOOK FOR THE BRIGHT ORANGE COLOR AND THE TRADE-MARK CLIPPER!



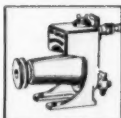
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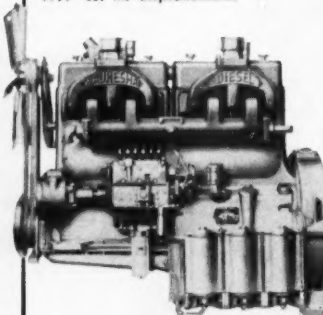


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The patented combustion spherical combustion chamber gives lively, responsive acceleration, shock-free operation, and clean burning for high fuel economy. Get Bulletin 1415.

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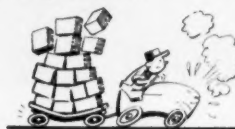
★ JOB TALK ★

...About Those Other Tires

BUSY LITTLE TIRES around construction jobs and yards are installed on materials - handling equipment such as lift trucks, small tractor-tugs, trail carts, pallet trucks, power buggies and wheelbarrows.

Equipment of this type mainly uses zero-pressure tires with hollow or solid centers; pressed-on solid tires; and pressed-on cushion tires. In addition, there are pneumatic tires for higher hauling speeds, extra traction, increased flotation off the pavement and better cushioning for the cargo. Some pneumatics for light service require no inner tube.

The B. F. Goodrich Co. provides 15 maintenance tips for their care. Here they are, together with amusing sketches to help emphasize the value of good care:



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2. Center Tires Correctly on wheels to avoid splitting of steel base and separation of rubber tread from steel wheels. Avoid overhand of any more than ¼ in. in outside position. If wheel is not wide enough to support the steel base of the tire properly, a steel supporting ring should be used.



3. Keep Runways Clean—Eliminate the source of tread-cutting and bruise damage, and your tires will last longer.

4. Regular Lubrication of all moving wheel parts, including power and brake systems, assures free-rolling and eliminates tire drag in starting and stopping.

5. Avoid Acids, Oils, Grease, Gasoline—These materials damage rubber.
 (Continued on page 28)

"For TOUGH JOBS...
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Look at this "Form-Grip" caped and full-welded joint—one of the many features of "Trouble Saver" Scaffolding. Note how this joint is welded—for keeps—all the way around the curved surface. This "Form-Grip" construction is used on all joints of all "Trouble Saver" frames.

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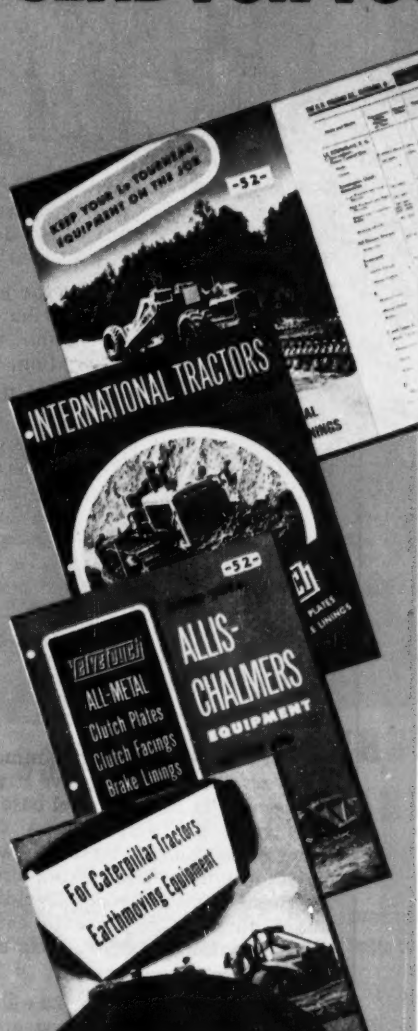
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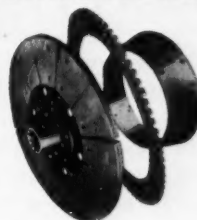
Velvetouch

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LOOK AT THE 1953

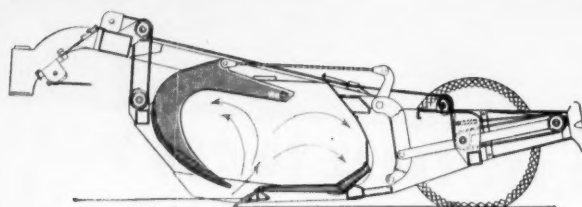


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Fast loading is just one of the economy features that keeps Heiliners out in front at earning more profit for earthmovers. The correct pitch and location of the offset cutting edge sets up a "boiling" fountain of dirt in the center of the bowl, quickly heaping both front and back with evenly balanced pay-load. Think of the time saved in filling clear to the back of the bowl in just a short digging distance!

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- ✓ **BIG PAY-LOAD CAPACITY.** Big pay-loads mean big profits! Heiliner's 14-yd. struck and 18-yd. heaped capacity lets you move more dirt per trip. Correct design and efficient loading action assure full loads in practically any material.

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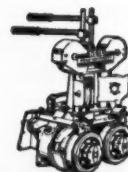
13 and 18-yd. Heiliner Scrapers



20-yd. Heiliner Bottom Dump Wagon

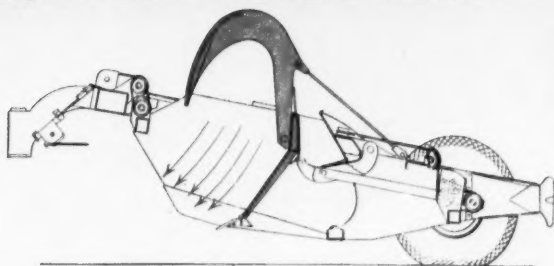


6, 9, 11 and 16-yd. Tractor Drawn Scrapers



Cable Power Control Units

HEILINER



FAST SPREADING with positive ejection

MONEY-EARNING FEATURES

- ✓ **POWER TO SPARE.** There's plenty of power in the big 200 HP Cummins diesel for faster operation in the pit or on the fill. Cummins diesels are well-known "fuel misers," too, for operating economy.
- ✓ **EASY SERVICING.** Heiliners cut maintenance downtime to the minimum. Both rear end and transmission can be removed without pulling the wheels. No propping or shoring necessary.
- ✓ **MANY OTHER BIG-PRODUCTION FEATURES.** Big, safe 4-wheel brakes give complete control, empty or loaded. 24:00 x 29 tires assure plenty of traction and flotation. Heil's famous planetary drive, with full 4-in. gear faces on the sun and planet gears, provide a low-torque drive for full utilization of engine horsepower.

Heiliners have the advantage of the *simplest type of forced ejection* known! It is the "tilting floor" positive ejection that cleans the bowl out slick as a whistle. The floor of the bowl is hinged behind the cutting blade and as the relatively low line pull activates the positive push-out ram, the floor tilts up to a 75° angle. Even mud and sticky gumbo are scoured from the stationary back and sides of the bowl as the load is forced out of the wide front opening. There's no time lost getting rid of the load . . . no extra yardage carried back to the pit.

Easy, fingertip operation of the patented double drum power control unit assures split-second control of scraper blade, ejector and apron. Easy-to-reach hand levers can be adjusted vertically and radially to suit the operator's convenience and speed his work.

The Heiliner's faster spreading and high maneuverability on the fill mean shorter cycle times. Fast loading, high-speed hauling and fast dumping add up to big profit earthmoving.

THE HEIL CO.



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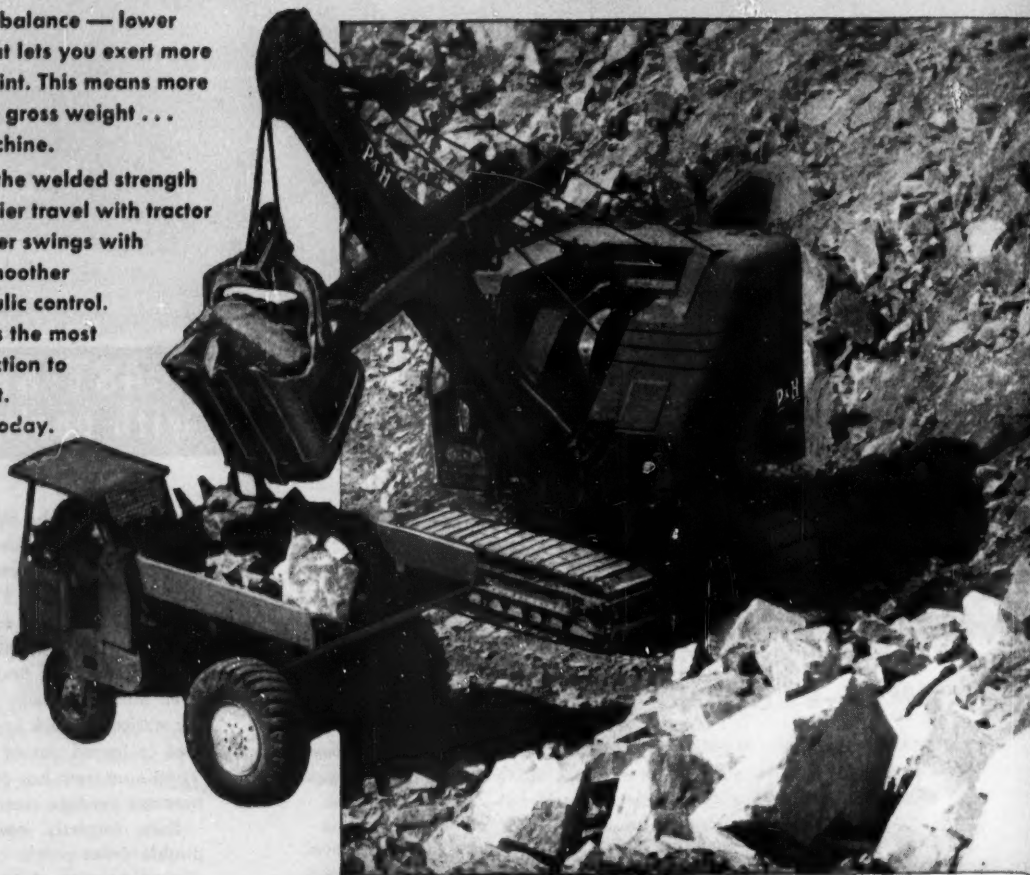
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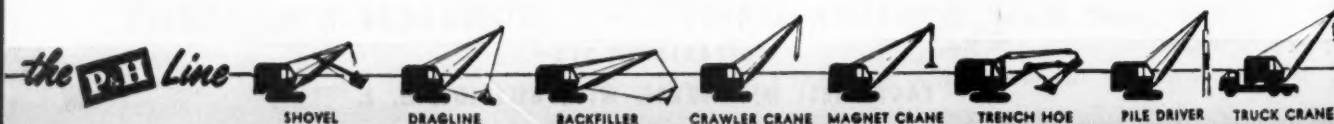


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University of Mexico...

THOUSANDS OF **DRIVE-IT** FASTENINGS



The new University of Mexico which will accommodate 25,000 students is another big project where Drive-It is used to great advantage for concrete fastenings. The Science Building shown has suspended ceilings anchored with Drive-It. Contractor is the I.C.A., S.A.



split-second fastening to **concrete steel**

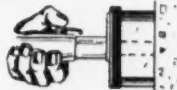
Drive-It uses a small powder load to drive hardened steel pins into concrete or steel. No power lines! No drilling!



DRIVE-IT, the first powder actuated tool approved by Underwriters' Laboratory.



DRIVE-IT cannot be discharged accidentally due to the push and turn sequence. This, plus the large safety pad makes **DRIVE-IT** triple safe.



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LeTOURNEAU
PICTURES
OF THE
MONTH



URNS IN 26-FOOT-WIDE CUT

Tournarocker maneuverability really paid off for Beretta & Novi, Brazil contractors, on this 654,000-yd rail relocation. Rather than back slowly 1000 ft or more down a 26-ft-wide cut, their two 16-ton Rear-Dumps drove in frontwards and turned around non-stop at the shovel. "Tournarockers' short turning radius (10½ ft with bowl raised) saved construction of access roads and turn-arounds," reported Giovanni Sala, project manager. Turn-arounds would have been very costly here. Cuts ranged from 50 to 100 ft deep. Units also saved time by dumping over bank, eliminating dozer cleanup. Some loads were spread on the fill in controlled layers. "These are the only units I know of," says Sala, "that can dump on the fill similar to bottom-dumps and over banks as end-dumps. Their interchangeability feature also made money for us." (Tournarocker prime-movers also power scrapers, bottom-dumps, cranes and flatbeds.) Beretta & Novi owns 10 Tournapulls in addition to their 2 Tournarockers. They report, as typical output, 78,000 yds in 100 days for their 2 Tournarockers in shovel-loaded sandstone and clay . . . 314,000 yds in 100 days for 6 of their Tournapulls push-loaded in sandy loam and clay. Hauls averaged 4250 ft on both sections of the job.

(Advertisement)

Performance reports on LeT equipment in action . . .



WORKS YEAR-ROUND — Bill Crawford, Buffalo, works his 2 C Tournapulls throughout the winter when most rigs must shut down. When frost is too deep for profitable scraper operation, he loads his "C's" by shovel. On typical winter job — digging grade crossings in Lancaster, NY — the 2 shovel-loaded Tournapulls moved 60 loads daily over 2-mi cycles.



PREPARES 4000 FT SUB-GRADE DAILY — That's the report from V. N. Holderman & Sons, well-known Ohio firm, on the output of this D Tournapull handyman. "The 7-yd 'D' releases big tools for production jobs and helps reduce costs generally," they say. Rig self-loads 5 pay yds, even in clay, often hits 28 mph on typical 8000-ft cycles through open traffic.



PLOWS 600 MI IN 4 DAYS — Clearing Wisconsin roads after heavy snow, Buffalo County Tournatractor averages 10 to 19 mph. "Haven't found snow deep enough to stop machine," says County Comm Schultz. Rig has gone through 12-ft drifts.



DOES 2 JOBS, 12 MI APART — This high-speed, rubber-tired Tournadozer alternately worked a highway job near Birmingham, an airport at Pontiac, Mich. On road work, it push-loaded 24 to 30 loads hourly. When scrapers worked long hauls, Tournadozer drove over highway to airport where it backfilled drainage tile. Rig replaced 2 crawlers, was 96% efficient.



LICKS 30% GRADES — Fully-loaded 16-ton Tournadozer hauls 12 pay yds of rock and dirt to Lookout Point Dam fill. Operator hit high speeds with complete safety. Rig has air brakes on all 4 wheels. Multi-discs provide 3763 sq in. total braking surface — 4 times as much as most haulers. Big low-pressure tires improve traction on the steep, often slippery haul roads.

Continued on next page

(Advertisement)

LeTourneau pictures of the month (cont'd.) . . .

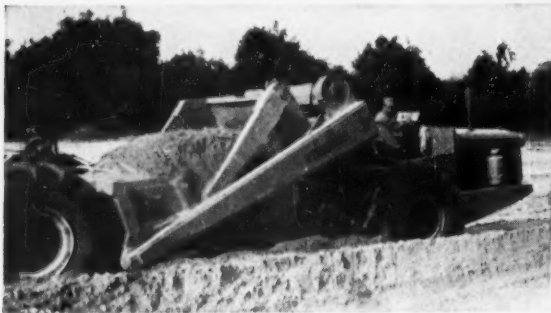


170% MORE DIRT WITH RUBBER — Time studies taken recently on Lowe Constr Co.'s 220,000-yd hwy relocation job at Cedar Rapids reveal some interesting figures comparing rubber-tired 186 hp Tournatractors and 124 hp crawlertractors. Towing same size scrapers (17½ yds heaped), both types of prime-movers averaged 12 pay yds of yellow clay per load.

Haul times, however, varied widely. Tournatractors regularly made a 4200-ft cycle in 6.9 minutes. Crawlertractors completed a 1900-ft cycle in 8.35 minutes. Tournatractors, with 19 mph top speed, averaged 9 mph, for 7¼ trips hourly . . . crawlertractors, with top of 6 mph, averaged 3.4 mph, for 6 trips hourly. On a station yd basis, Tournatractors moved 170% more dirt—1827 to 684 station yds per hour.



MUD-HOG — Building stockpond after winter thaw, D Tournapull worked through normal shut-down weather. "Tournapull went loaded where other rubber-tired rigs couldn't go empty," said Owner John Hollerich. The "D" even got through mud radiator-deep. Its output on this LaSalle (Illinois) job: 70 pay yds (14 trips) of gumbo and wet clay hourly on 400-ft cycles.



NEW RECORD FOR SAND — On 325,000-yd relocation of Florida Rt 50, H. E. Wolfe's 3 C Tournapulls move ball-bearing sand at record pace. On 1000-ft hauls, they average 510 pay yds hourly. With low-pressure tires and power-proportioning differential, "C's" pull easily through the soft sand. "They move more yds per day than any rig of their size," says the Job Supt.



125,000 YDS IN 950 HRS — That's the 9-week record of Martin Goebel's Tornadozer on stockponds in Texas. Here, rig has just dug a 3500-yd pond in 20 hrs. Same job would have taken 60 hrs with contractor's 85 hp crawler. Tires have needed no maintenance despite abrasive material. Track rollers must be replaced every 90 days, according to contractor.

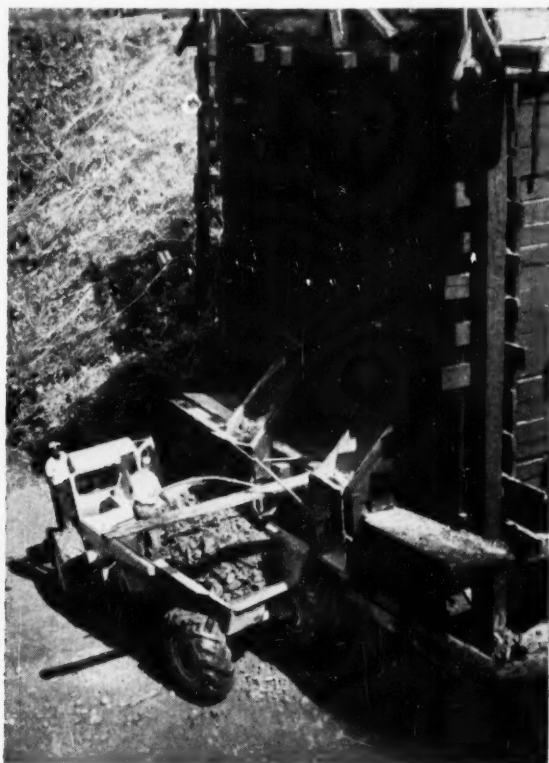
Performance reports on LeT equipment in action



CARRIES 12½ TONS OVER HIGHWAY — The Queen City Concrete Pipe Corp took 25,600-lb sewer pipe sections 1.1 mi through Evansville (Ind) city traffic with Tournacrane. Rig lifted 120-in. (ID) sections at casting site, carried load on short boom to prevent whipping. Transit speed averaged between 10 and 15 mph. Low-pressure tires cushioned bumps. No damage reported to pipe or highway. Rig needed no outriggers. Newer C Tournacranes can move loads of 20 tons. Top speed is 40 mph.



GIANT — Tire, 10 ft high, 4 ft wide, gets test run on 35-ton Tournapull before installation on special "swamp buggy" being designed by LeTourneau. Firestone built, tire has no tube, runs over marshy ground on pressures as low as 10 to 15 lbs.



FLYING GOLD-MINER — To reach isolated mine in center of Nicaragua, this 9-ton Tournarocker was cut apart and flown 110 mi over the jungle. Re-welded at job, it now hauls gold ore and waste to crusher. In typical month, it worked 356 hours, hauled 4698 tons. Hauls averaged 9800 ft, all up-grade, with 9500 ft at 3 to 10%, 300 ft at 12 to 20%.



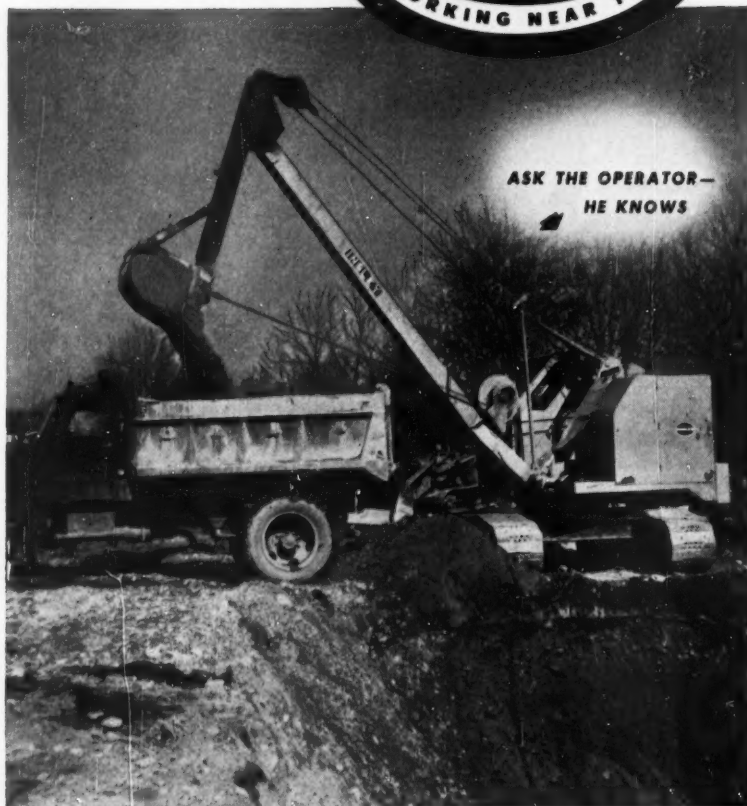
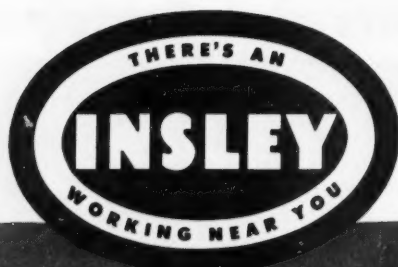
SCRAPER BECOMES GRADER — LeTourneau 7-yd Tournapull spreads load at housing project near Dayton, Ohio. "Rig replaced 3 dump trucks and a loader," reports Owner W. A. Wadsworth. "Even used it to finish-grade within 1-inch, which is just as efficiently as we could do the job with a grader."



Tournapull, Tournadozer, Tournarocker, Tournacrane — Trademark
Reg. U. S. Pat. Off. Tournatractor — Trademark G. 275,333

WRITE OR PHONE — If you'd like more information on LeTourneau equipment, get in touch with your LeTourneau Distributor or write us direct. We'll be glad to tell you about any of the tools described on these 4 pages. You also should check the new Tournatractor, shown here stockpiling lime rock in Florida.

— R. G. LeTOURNEAU, Inc., PEORIA, ILLINOIS



ASK THE OPERATOR—
HE KNOWS

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that Insley Equipment can be rated-for-the-project . . . he knows that specification alternates make it possible to buy the exact equipment to do his job best.

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JOB TALK . . . Continued from p. 28

12. Use Equipment for Proper Use Only—Don't try to carry heavy loads on light-service equipment.

13. Increase Carrying Capacity with a third axle and tandem tire assembly in cases where unavoidable load distribution causes overloading.



14. Check Steering, Axle Alignment regularly to protect against fast, irregular tread wear and separation.

15. Allow Sufficient Tire Clearance—Tires expand under load. A minimum over-all clearance of $\frac{1}{4}$ in. between tires and any part of the vehicle is mandatory.



An Eye to the Future

A majority of the new homes constructed in Florida have concrete block walls and, in most cases, the owner or tenant contemplates the installation of one or more room air conditioners at some time.

The Livesay Window Co., Miami, makers of precast window frames, makes available to builders frames to receive air conditioners which can be built into the walls during erection. If air conditioners are not installed right away, the frames are plastered over inside and out. When an air conditioning unit is to be installed later, it is a simple matter to cut through the plaster and utilize the existing frame.

Frames sell for \$8 and eliminate the tedious work of cutting through a masonry wall for a later installation.

Looking For Pumping Economy?

READ THIS

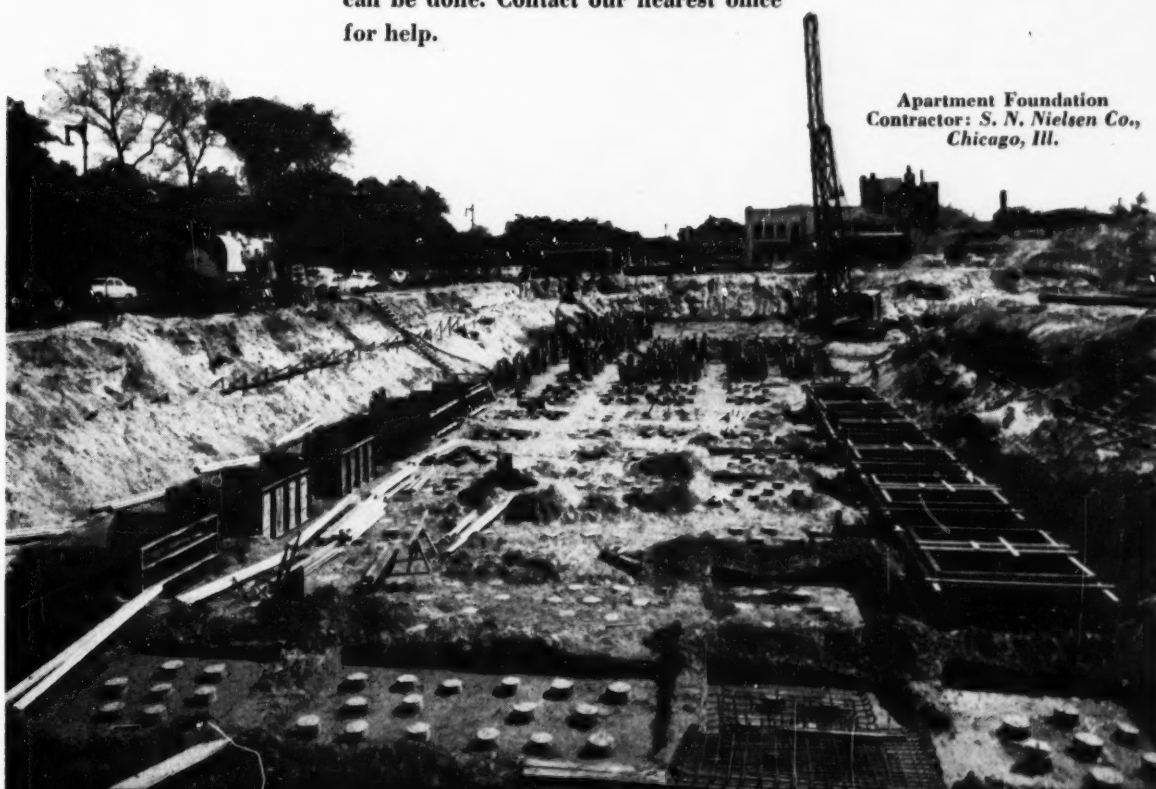
ONE MORETRENCH PUMP, working on 900' of Header and 179 Wellpoints, predrained this large area to perfection. Material was very fine silt overlying stiff clay.

When less units do the work, every related cost is proportionately lower.

It takes A MORETRENCH Wellpoint System to get results like this!

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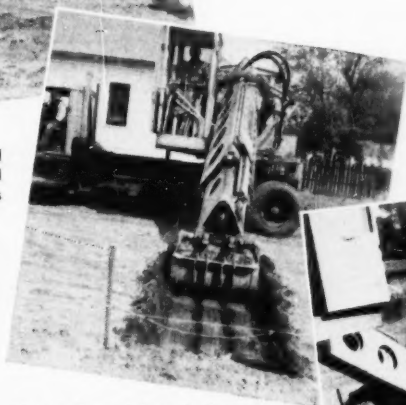
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First cut hews right to the line—all cuts are extremely accurate.

Gradall does a better job

FROM START TO FINISH

GRADALL, with its hydraulically-controlled *arm-action* boom, can maneuver easily in the most difficult places to do a cleaner, more accurate job from start to finish.

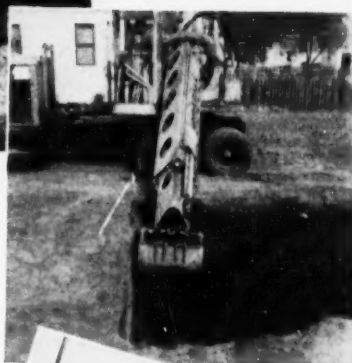
On a basement excavation in Fresno, Calif., the Gradall had to reach the job through a narrow congested alley, over sidewalks and under utility lines.

This "obstacle course" was no problem for the Gradall, and this 12' x 15' 6" basement excavation was completed in two hours.

On small jobs like this and on big earth-moving jobs, too, Gradall does fast, accurate work, eliminating much hand labor. With a Gradall, you have *one machine* that does *many different jobs*—one that earns fast dividends on your investment!



The telescoping boom, with its free wide swing and controlled down pressure, cuts job time.



View shows how Gradall can cover side areas and also deepen cut without change of position.



Here you see how the Gradall cuts clean, sharp corners—saves costly clean-up hand labor.

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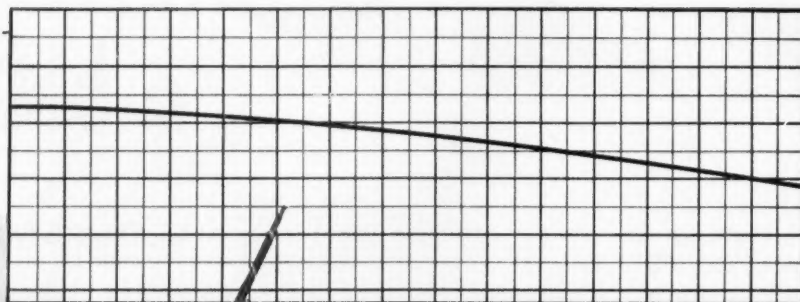
YOU CAN PRODUCE IT BETTER, FASTER, FOR LESS WITH WARNER & SWASEY MACHINE TOOLS, TEXTILE MACHINERY, CONSTRUCTION MACHINERY

January 1953 — CONSTRUCTION Methods and Equipment — Page 41



Diesel Engines

(2-CYCLE)

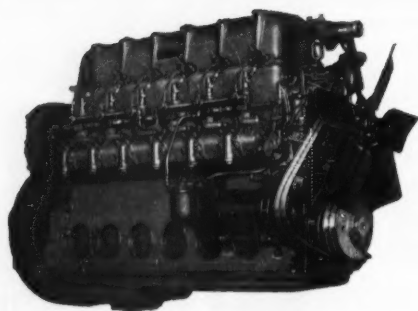


*Can your diesels
match this
torque curve?*

This is the torque curve for the P&H Model 687-C Diesel Engine. Note how the torque characteristics are sustained throughout its entire horsepower range.

That means steady, responsive power at all speeds — greater lugging "ability" for those toughest jobs. It's the kind of unfaltering performance that assures more profits in any service, constant or intermittent.

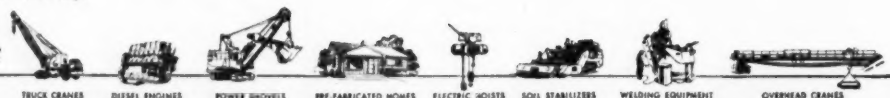
Steady torque for steady work is just another outstanding feature of P&H Diesel Engines — America's most advanced line. Ask your P&H Diesel representative for the full story. Or write for literature.



P&H Diesel Engines are built in 1, 2, 3, 4 and 6-cylinder models — up to 145 h.p.

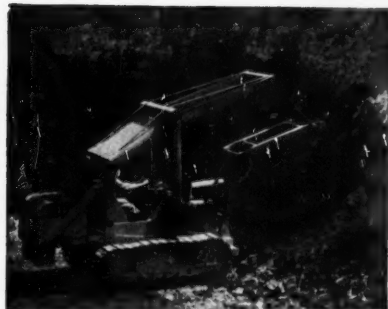
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the **P&H** *Line*



We Engineered the Mechanical Advantages Of Big Shovels into the Dempster-Diggster

The Dempster-Diggster's ability to dig hard and stratified materials without shooting is shown in photo at right. Note ample loading clearance. Dempster-Diggster, shown at work in Florence, Ala., is the Type GRD, Model 100.



This Dempster-Diggster, shown at work in Creighton, Pa., is also loading hard and stratified material without shooting. It is the Type CR, Model 100.



The Type GRD, Model 100-HL is shown above loading Hopper Bottom car, height of which is 10'8" from rail to top of car.

Simultaneous Independent Hydraulic Crowding and Hoisting, Variable Crowd Action at Any Dipper Position and Changeable Buckets are engineered into the Dempster-Diggster. Many of the present Dempster-Diggster owners were at one time in the same position you may be in today. They needed front end loaders, but they also needed shovels that could dig out 15 to 18 foot banks. The versatility of the Dempster-Diggster, plus its economical and efficient operation, left them with only one choice. In the first place, the Dempster-Diggster can do anything a conventional front end loader can do—and do it faster and at less cost! Second, on big jobs the Dempster-Diggster is without equal for working in tight places. The Dempster-Diggster is available in either of two types of traction—pneumatic (Type GRD) or crawler (Type CR). Both types are supplied in two models—the Standard (Model 100) or High Lift (Model 100-HL). Our new catalog No. 1032, with over 35 illustrations and complete specifications, shows how this revolutionary shovel can cut your costs tremendously. For your copy fill in the attached coupon and mail today!

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Please send me, without obligation, your Dempster-Diggster Catalog # 1032.

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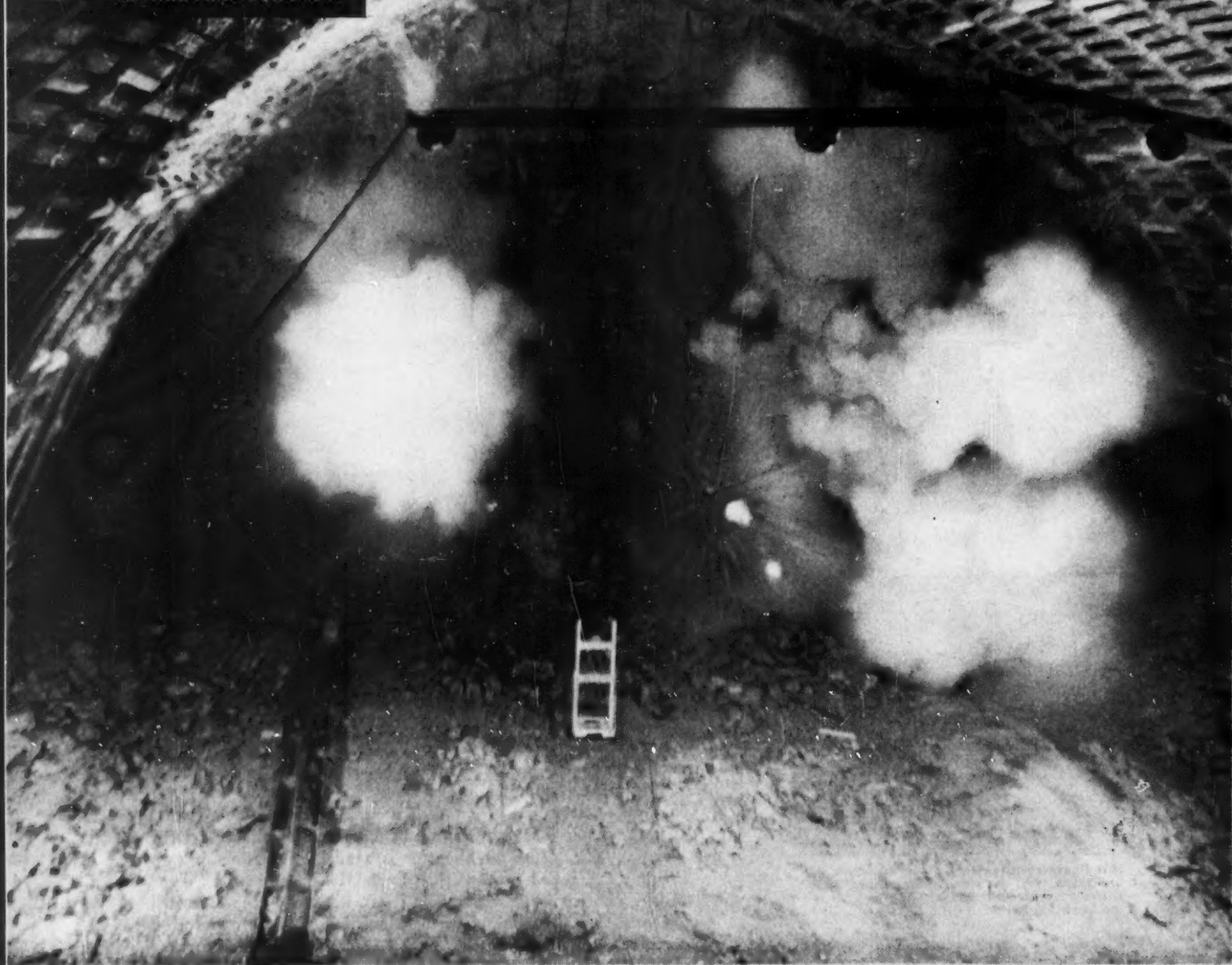
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PICTURE OF THE MONTH

CONSTRUCTION
METHODS AND EQUIPMENT



Tunnel Blast Close-up

PROBABLY NEVER BEFORE have you seen a picture like this for, so far as we know, it is the first successful shot ever to be taken of a tunnel blast in a heading. Both shots (blast and picture) are significant, too, because they mark the holing through of the top heading between Shafts 3 and 4 on the Ontario Hydro Commission's 51-ft power tunnels at the Sir Adam Beck No. 2 hydro project at Niagara Falls, Ont. The blast was set off by Perini-Walsh and Associates, contractors for more than half of the 11 mi of 51-ft tunnels on the project. Ontario Hydro engineers took the remarkable picture. See the wooden frame on the tunnel floor? It holds a concussion cell that tripped the shutter as the blast started working. The camera was lashed behind a protective screen on top of the drill jumbo. And that bank of lights in the upper foreground didn't stay in place very long, either.

Better Concrete

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YOUR NEXT PAVING JOB can prove it! Thousands of contractors, on jobs both large and small, have found that they can get better concrete with Atlas Duraplastic, the *original* air-entraining portland cement.

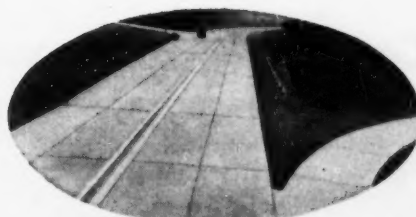
Because the use of Duraplastic cement minimizes bleeding and segregation, the finished concrete is fortified against the effects of freezing-thawing weather and the scaling caused by de-icing salts.

Moreover, Duraplastic is *easy* to use—no additives, no unusual changes in procedure. Duraplastic requires less mixing water for a given slump. The mix is more workable, more uniform. It dumps, spreads, finishes easily . . . permits finishing closer to the paver and earlier protection for curing.

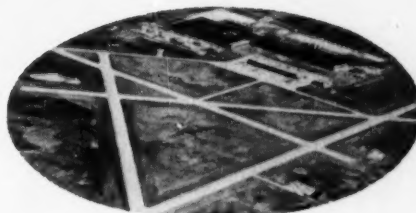
YET DURAPLASTIC COSTS NO MORE

All these advantages are yours *simply by specifying Duraplastic*. It sells at the same price as regular cement; complies with both ASTM and Federal Specifications. For more information, write Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.

*"Duraplastic" is the registered trade mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.



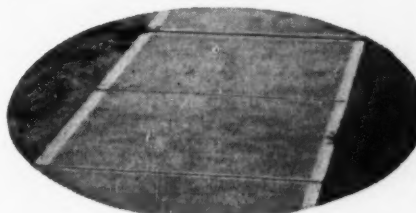
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Allegheny Co., Pennsylvania.
Placed in 1947.



O'Hare Field,
Park Ridge, Illinois.
Placed in 1942.



Plant paving, U. S. Rubber Co.,
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Placed in 1944.



Sidewalk,
Babylon, Long Island.
Placed in 1944.

CM-D-115

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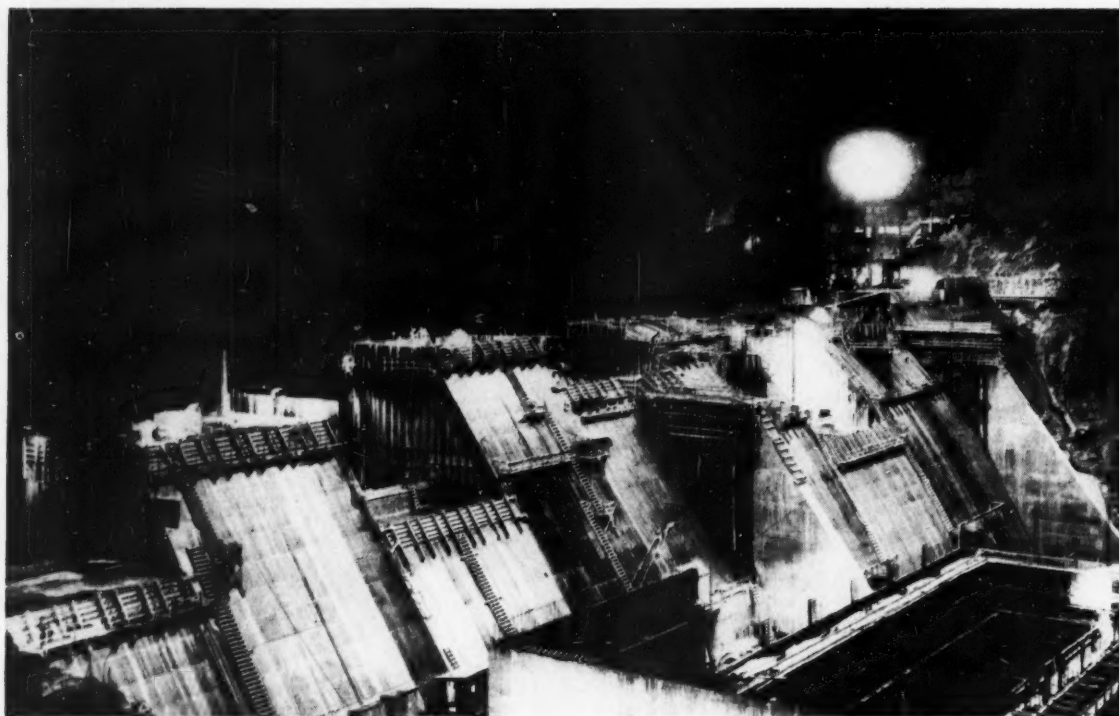
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Construction News in Pictures

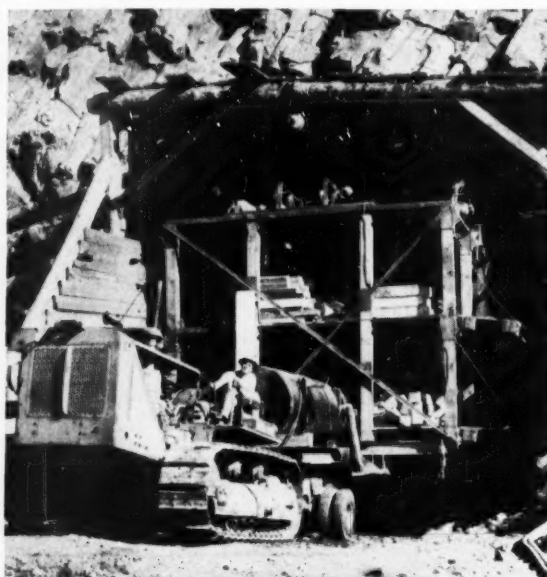


BRIGHT AT NIGHT—Operations on the Bureau of Reclamation's Canyon Ferry Dam on the Missouri River near Helena, Mont., are carried on right around the clock. No extra light was used to take this normal time exposure by C. A. Knell, Region 6 photographer. Good photography gives some added brilliance

to the picture, but look closely and you will see men building forms under excellent illumination. Dam will be completed in another year and will contain 400,000 yd of concrete. It is 1,000 ft long, will be 225 ft high. Power plant is under construction in right foreground. Batch plant is at upper right.



IT'S A PIPE—Easy, that is, for this Model HM Hough Payloader to place 3-ton sections of 60-in. concrete sewer pipe in Denver, Colo. Loader has crane attachment, picks up pipe from street level alongside trench and joins it to previous section, as two men guide it. Payloader travels on fill dumped over pipe already laid—placed by trucks that are loaded by backhoe excavating trench immediately ahead.

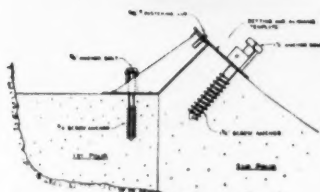


DOUBLE-DUTY JUMBO—This triple-deck jumbo, on rubber, drills headings for two 31-ft diversion tunnels at Palisades Dam for the Bureau of Reclamation on the Snake River in eastern Idaho. Its 15 drills drive about 120 holes, 8 to 12 ft deep. Then the Caterpillar D8 wheels out the jumbo, and the heading is blasted out; whereupon the jumbo is moved into the second tunnel to drill a heading, while the first one is mucked out.

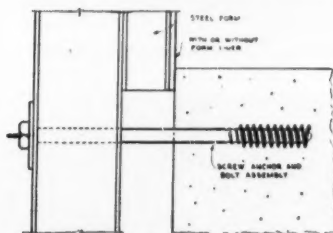
WHEN
Heavy Anchorage
IS REQUIRED

SUPERIOR

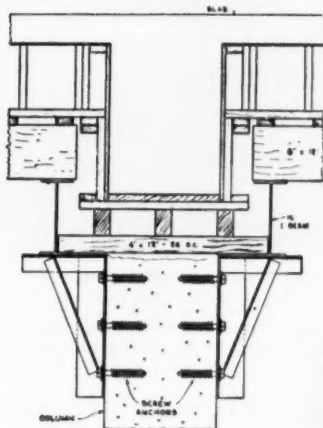
SCREW ANCHORS and BOLTS



For Anchoring Tunnel Forms



With Cantilever Forms on
Dam Construction



Supporting Temporary
Brackets for False Work.

PROVIDE TEMPORARY OR PERMANENT SUPPORT

Providing a tight safe fastening invulnerable to shock and vibration, Superior Screw Anchors and Bolts are widely used in heavy concrete construction for *temporary* anchorage for steel tunnel forms, false work support brackets, cantilever steel forms for gravity dams and similar structures. Their use also permits convenient lifting of precast concrete slabs, beams and piles.

Easily assembled, Superior Screw Anchors and Bolts are ideal for numerous practical applications such as *permanent* anchors for cleats, fenders and other accessories to concrete structures.

Anchor bolts can be removed quickly with a wrench. No strength is lost by returning the bolt to the anchor. The full bearing of the coarse bolt thread is on the firmly imbedded anchor which provides steel bearing for the thread.

Superior Screw Anchors are available for $\frac{3}{8}$ " to $1\frac{1}{4}$ " bolts.

Remember—when you use SUPERIOR you are assured of the *best* in design, material, and workmanship. Request a copy of our new Catalog 500—it contains a valuable table for spacing studs, wales, and form ties.

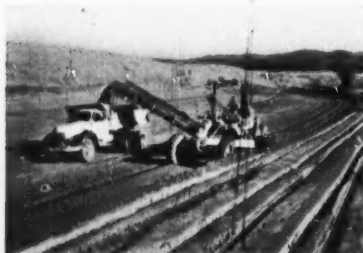
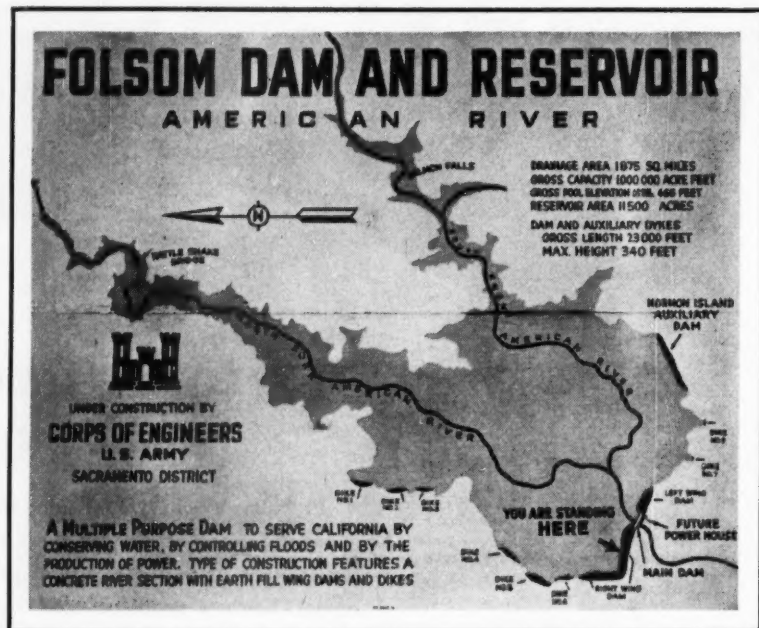
SUPERIOR CONCRETE ACCESSORIES, INC.
4110 Wrightwood Avenue, Chicago 39, Illinois

New York Office: 1775 Broadway, New York 19, N. Y.
Pacific Coast Plant: 2100 Wilshire St., San Francisco, Calif.

"CATERPILLAR"

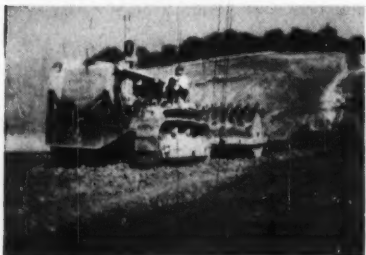
Nature gets a lesson in topography on the Folsom Dam

WHEN plans for damming the American River in California were considered, it became evident that the logical site near Folsom would not be adequate for potential storage if plugged the conventional way. Studying the problem, Army Engineers soon came up with an answer. They proposed a larger dam than the natural topography permits by adding wings to the main dam, plugging saddles between the hills and placing an auxiliary dam through an ancient river channel. The project will serve three purposes—flood control, water conservation and hydroelectric power for California. Gross length of the two dams and saddle dikes of rolled



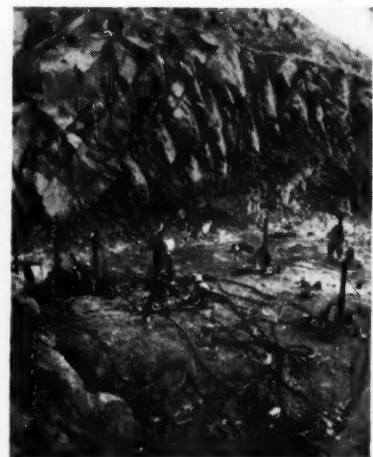
Above: Loading fill on the double on this 23,000-foot gross length project is this "Caterpillar" team—a No. 12 Motor Grader equipped with DoMor Elevating attachment.

Below: This "Cat" D8 Tractor with sheep-foot tamper works steadily compacting fill. Contractors: D. & H. Construction Co. and M. H. Hasler Construction Co.



earth totals over 23,000 feet—more than four miles.

Helping contractors speed various phases of construction are many "Caterpillar" Diesel Engines, Tractors, Motor Graders and Earth-moving Equipment. As on other projects, the big yellow engines and machines are giving a good account of themselves. Ruggedly built, they stay on the job day after day with a minimum of down-time. And extra hours of operation at lower cost are being added by proper maintenance—a matter of only a few minutes a day per unit. Good service from the nearby "Caterpillar" Dealer also helps step up their record of performance.



Drilling shot holes for power house excavation is a phase in which "Caterpillar" equipment is used. Compressed air is supplied by two Gardner-Denver and two Chicago-Pneumatic Compressors, each powered by a D13000 Engine. Contractor: Guy F. Atkinson Co.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS

Harold W. Richardson, Editor

We've Got a Bear by the Tail

THE MOST BAFFLING PROBLEM facing contractors today is how to cope with the ever-increasing demands of unions for welfare and pension programs. And this is something we can't stave off by wishing it weren't here, or by ignoring it. The problem is so close that contractors who haven't met it face to face are shivering with a bad case of jitters.

The bold facts of the case are that pension and welfare systems have already become so far entrenched in construction labor negotiations that a precedent has been set. Furthermore, another inescapable fact is that, in the light of growing social consciousness in this country, such plans are bound to spread to all segments of industry. Construction hasn't a chance to escape them, even if the industry wanted to.

So we have a bear by the tail, scared to hang on, more scared to let go. But, after all, isn't that fright based largely on ignorance and uncertainty? Facing the inevitable, would it not be better for contractors to stop fighting and ducking the issue and devote their energies to working out sound and equitable plans? All too many of such plans as already have been put into effect are the result of reckless and unstudied compromises for knocking off a few cents from immediate wage demands.

There are two parts to this question—welfare and pensions—and each should be considered and treated separately. Welfare deals solely with sickness and accident benefits, hospitalization, and small life insurance policies and death payments. Pensions are entirely different, they are supposed to be old-age compensation for long-time services rendered the industry.

Of the two, welfare problems seem the simpler. They largely concern local unions and on-the-job conditions. The New York City Building Trades Employers Association has just issued a report on 28 welfare plans in effect in the Metropolitan area covering some 80,000 building tradesmen. There are just as many plans as there are unions participating, but in all cases they are

financed entirely by employer contributions, usually from 1 to 3% of payroll. Up to January 1, 1952, reserves topped 12 million dollars, annual contributions averaged 8 million, and benefit payments were running 5½ million per year. Some unions pay benefits only to active members, others include all members, working or not. Some exclude benefits for permit holders and members of outside unions, others include every man on the job.

In New York the welfare funds are administered by a joint board of union officials and employers. In general, the plan seems to be working satisfactorily. But here again, we have a stable top organization of employers, stable unions, and a fairly regular employment of the same workmen year in and year out.

Pension systems are far more complex and difficult to establish on a fair basis. Should they be funded or not? Should they include present indigents, disabled and retired members, or should the plan start from scratch? But most important, should it be conducted on a local union or national basis for any one trade?

The New York Bricklayers Union has a funded pension plan apparently working to the satisfaction of all. Contractors contribute 20c per hr per man; the fund is administered by a joint union-employer board. All funds are paid into a bank named as official depository, and the bank keeps books on individual union members. For two years during negotiating the details, contractors paid into the fund, so that last July when it officially went into effect \$1,625,937 was readily available to start pension payments to 294 bricklayers over 65. These men had earned no credit under the plan, but were recognized both by employers and unions as having contributed much to the industry and worthy of benefit payments.

Such a plan works in New York City under a stable employer and union administration. How would it work out in the wide-open spaces? Probably it wouldn't. There we have the difficult

problem of workmen moving in and out of the area, as well as from employer to employer. And here, too, we don't have many union organizations possessing the stability necessary to administer huge sums successfully.

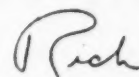
In general, it looks like pension plans should be set up on a national basis, tied in with the International Union organizations. One such plan has been in effect for several years in the electrical trades. The International Brotherhood of Electrical Workers and the National Electrical Contractors Association have set up a joint board to receive pension fund payments from NECA member jobs all over the country. Thus, regardless of how much a workman moves round, he is always protected, and his benefits keep accruing.

Some contractors, wary of local union manipulations, are advocating some form of special social security to handle construction worker pensions. Perhaps that would be the best plan after all, such as setting up an agency similar to the Railroad Retirement Board.

But regardless of the form of plans adopted, they should be based on actuarial consideration if they are to last and are to benefit those workers entitled to such benefits.

The whole subject of welfare and pensions in construction is touchy, baffling and complex. There are national and local laws to consider, such as the Disability Benefits Law in New York State. Yet, difficult as the problem may be, they cannot be shrugged off by the contracting industry. Their solution calls for the best thinking of the best brains both of contractors and labor leaders, with each group approaching a now common problem with a determination to work it out to the best interest of all.

That bear can get awful rough if it turns on us and we aren't sufficiently enlightened to capably handle him.





SNOW SHOWERS the landscape as a big evergreen is toppled by an Allis-Chalmers crawler while building a logging road in the State

of Washington. Although forest soils generally are granular and move more easily, hard-frozen clay also is encountered.

You Can Doze in Winter

EARTHMOVING OPERATIONS in those areas where the ground freezes deep normally come to a standstill during the winter months. And for a good reason: It simply is a poor time to move dirt.

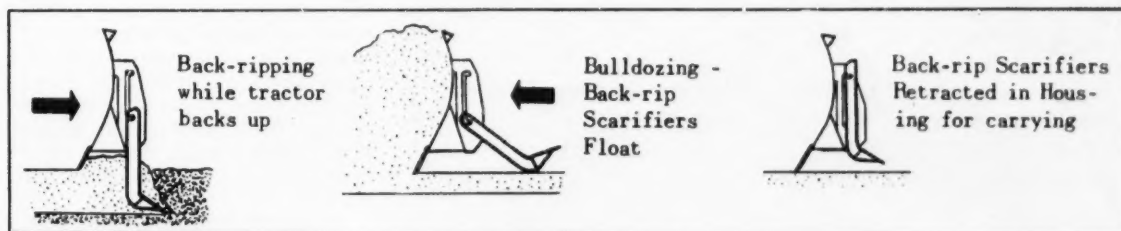
Yet, in these times of high-cost equipment and when construction backlogs are so great, contractors keep going as long as possible, and there are some who manage to move yardage almost every day—as did one contractor who was building an urgently needed Missouri River levee last winter.

For tough winter going the versatility of the bulldozer is extremely useful. Therefore, this discussion



BLADE CORNER of Caterpillar D8 dozer digs down and rips up chunks of frozen ground on a cold day in Idaho. Versatility of the bulldozer really comes to the fore in winter when conditions often

change over night. This operator is building an access road along a river at the site of a dam near Clark Fork. Rig is owned and operated by Morrison-Knudsen.



BACK-RIP SCARIFIERS can be used the year around, but may be worth many times their cost when dozing frozen ground. Installation

is easy and tractor power can be put to work efficiently, both when dozing and when backing up for another load.

shall deal almost exclusively with winter dozing suggestions and tips.

In order that the material can be broken up and lifted out, it is necessary to get under the frost line when dozing frozen ground. It is advantageous to work a small area—don't try to rip up more ground than you can handle successfully. Confine your work area so the ground does not freeze at one end of the pit while you are working the other end. You can expand the area as conditions improve.

While working in deeply frosted ground, tilt the dozer blade so all the weight and pressure can be

concentrated on one end. The blade may be tilted up to 12 in. To make the adjustments, shorten the brace on one side and lengthen the brace on the other side. The side of the short brace will be the low side. Start dozing as if you were cutting a "V" type ditch. Continue cutting in this manner until you have cut through the frost line. After the frost line has been penetrated, change your method of dozing to conform with that of a side-hill cut. In other words, sheer off the frozen ground with the edge of the dozer blade.

If the frost is not more than 2 to 6 in. deep, open the cut in the same manner as if lifting up old concrete



ANGLEDOSING with a Caterpillar D8 in Colorado windrows dirt from a bank that has a deep frost layer on top. This is an earthmoving project near Denver by Phelps-Wunderlich Co.



ON THE IRON RANGE in Minnesota in winter the going is rugged for this Allis-Chalmers HD-19. Low-temperatures service calls for good steel alloys in frames and moldboards.

pavement. Tipping the top of the blade back increases the digging angle. To tip the blade back, shorten the tilting braces an equal amount of turns so the cutting edge of the blade will remain on the horizontal.

Another aid in frost work is the use of back-ripper teeth attached to the dozer blade. These teeth pivot from housings which are mounted on the bulldozer moldboard in the case of straight blades, or on the C-frame when angling blades are used. While back-ripping, the ripper automatically acts as a scarifier and can cut to a depth of 9 in.

Usually a 6-in. crust can be broken through and operators have broken through as much as a 12-in. crust. Success in breaking through a crust depends on the type of soil and its moisture content. For example, it would seem easier to break through a gravelly soil into which frost has penetrated than it would into a clay formation.

When considerable rock is encountered in addition to frost, it is sometimes necessary to drill and shoot in order to loosen the ground sufficiently so that the bulldozer blade can get under it.

Grader Can Help

A scarifier on a motor grader can be used to break the crusts ahead of a bulldozer, or a ripper type blade could be used in place of the regular bulldozer or angledozer blade. A tipdozer blade makes it possible to get the point into the ground first and work under the crust and through it so that the earth is turned up a little to make it easier to work.

The first passes with the bulldozer blade are difficult in frozen ground. The tracks on crawler tractors are a great help in breaking through a crust, depending, of course, on how deep the freeze has been.

All manufacturers caution owners of their crawler tractors to be careful when they are starting the tractor in cold weather. Check whether there is any indication of the tracks being frozen to the ground or if dirt is frozen on the tracks and on sprockets.

On the Tournadozer, the bulldozer blade is adjustable a slight amount for penetration in frozen or hard material. The bowl is adjusted to a side-tilt position with one corner lower than the other by loosening and tightening alternate nuts on the trunnion eyebolts. To change the tilt, adjust the trunnion eyebolts upward or downward an

equal amount on both sides of the machine.

This will lower one corner of the blade and dig in the sharp dozer point. With all the Tournadozer power turned loose on the dozer corner, it digs into frozen earth and hard pan with comparative ease.

By going back and forth you will be able to work down through the frost line. Once through the frost line you can clear off a strip the width of the blade and the length that you are going to shove. After you have done this, keep your blade just below the frozen ground, using one corner to widen the cut. Use the powerful lift of the blade to take out large chunks.

If you are using an angled dozer on your Tournadozer the vertical tilting adjustments are located on either side arm.

Side Tipping

Another way to get penetration with one corner of the blade without adjusting the tilt is to run one side of the Tournadozer up on a ridge, rail tie or log laid lengthwise in the direction you want to doze. This will lower one corner of the blade and you can proceed as outlined above.

When moving dirt with scrapers in freezing weather, it often pays to use a rooter to break up the hard, frozen top soil.

At the end of the day, lower the scraper or dozer bowl on to planks to prevent the bottom edge from freezing to the ground. Be sure all dirt has been removed from the scraper bowl and also from the dozer blade before stopping for the night. It's a good practice to spray a thin film of oil in the scraper bowl and on the dozer blade. This will be added protection to keep dirt from freezing.

The chief problem facing all manufacturers of heavy earthmoving equipment, when that equipment is working in frozen ground and in sub-zero temperatures, is the breakage of vital and heavily loaded parts, such as bulldozer frames and moldboards.

Ordinary steels used in this equipment become brittle at low temperatures, and their resistance to shock loadings is reduced considerably. In fact, resistance to shock loading is reduced to such an extent that extreme care must be taken by the operators to prevent breakage. It goes without saying that the service to which a machine is subjected is much harder in frozen ground, and that the result-



LARGE CHUNKS of frozen ground are placed by a Tournadozer after frozen top cover has been broken up. Powerful lift action of the blade can pry out big frozen sections.

ing shock loads are greater. Coupling the two together makes for much higher maintenance.

Some work has been done through substitution of materials for sub-zero temperatures, and there are certain steels available that have a much higher resistance to brittleness than do the ordinary low-carbon steels. This refers particularly to steels having a nickel content. It is possible to build some of the heavier loaded members from these steels and obtain satisfactory performance.

Hydraulic systems are affected materially by sub-zero tempera-

tures, as ordinary hydraulic oils, and in many instances ordinary motor oils which are used in hydraulic systems, turn to jelly at low temperatures. It is necessary to caution operators to warm up their systems before beginning any heavy work. If this is not done, the elements common in all hydraulic systems, may be ruined.

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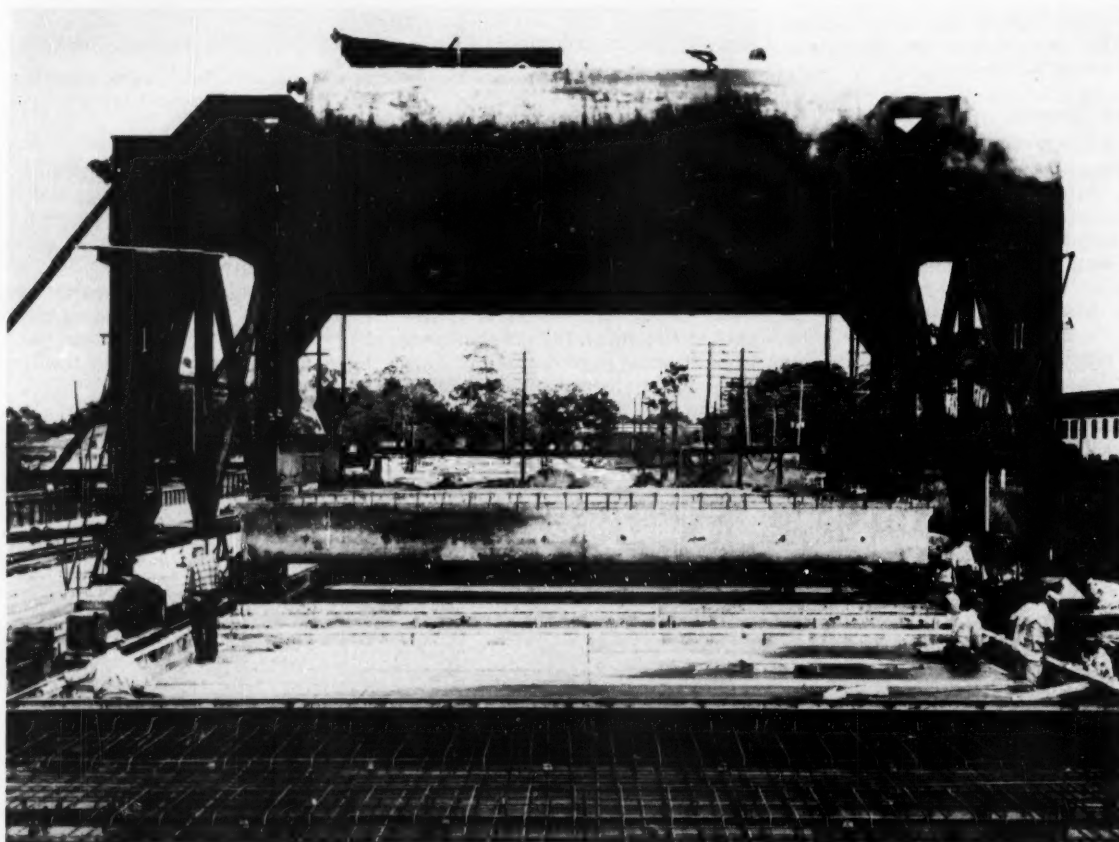
These helpful tips and the accompanying pictures were provided by the Heil Co.; Allis-Chalmers Manufacturing Co.; Caterpillar Tractor Co.; and R. G. LeTourneau, Inc.



WORKING THE PIT, winterized Tournapull keeps right on producing in uncovered area. When shutting down for the night, let blades and bowls rest on timbers, clean dirt off parts.



Did you ever see both steam and compressed air used simultaneously for powering a steam hoist engine? Well, we did, on Merritt-Chapman & Scott's Bay St. Louis bridge job in Mississippi—and it works. That is only one of many interesting construction tricks veteran Rod Hand project manager, has devised to make this one of the outstanding jobs of the year. Read all about 'em in this article.



Special 50-ft air-steam gantry lifts 122-ton deck slab as . . .

Precasting Pays Off on Long Concrete Trestle

By HAROLD W. RICHARDSON, Editor

IT COULD HAVE BEEN an ordinary, routine job—building a 2-mi all-concrete highway bridge across the shallow bay between Bay St. Louis and Pass Christian, Miss.

Had the contractor followed usual procedure, he would have precast the piles, of course, but then would have built the caps and roadway deck in place, with all the

elaborate formwork such operations required.

But Merritt-Chapman and Scott Corp., of New York, bid the job with something else in mind—and got it. It was decided that roadway deck slabs (integral with the superstructure framing in this case) could be precast more economically on shore, along with the big piles, and floated into place. The bridge is now more than half complete, and the scheme is working out fine.

It's a he-man job though, for those half-width roadway slabs weigh 122 tons apiece, and you don't trundle stuff like that around in wheelbarrows. It takes special gantries, big revolving cranes and plenty of husky floating equipment, plus a man-size pile rig to drive 24x24-in. piles up to 90 ft long.

Lots of Concrete

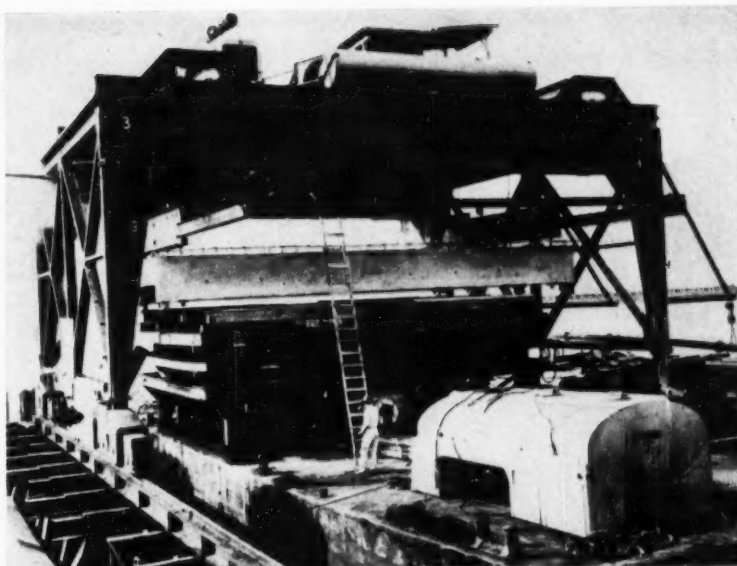
The four-lane bridge, 10,198 ft long, was designed by Hazelet & Erdal, consulting engineers of Louisville, Ky., for the Mississippi State Highway Department. Across a center channel will be a double-leaf bascule of 124-ft span, carried on four piers being built within sheetpile cofferdams. The remainder of the structure is pile trestle with concrete caps, concrete roadway, one sidewalk and combination concrete and aluminum railing.

Pile bents are spaced 41 ft apart, with eight 24x24-in. piles per bent. Every seventh bent is double, with piles battered in both directions for longitudinal stability.

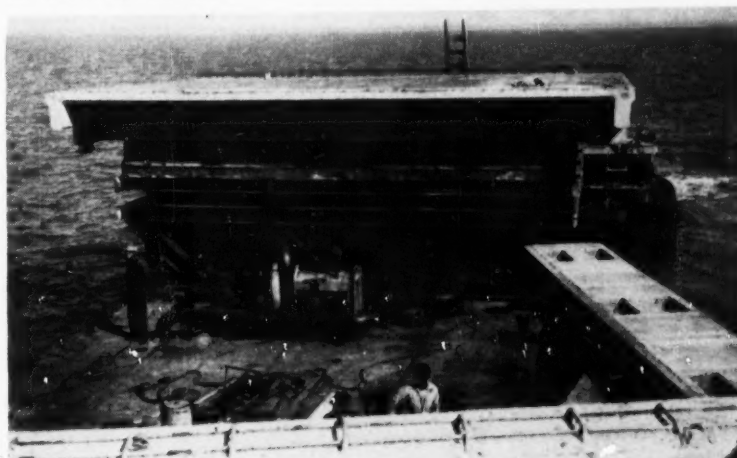
The job calls for 2,056 of the big piles up to 90 ft long, plus 400 18-in. sq. piles in the four center piers. Borings failed to reveal a couple of deep soft spots, so 240 H-beam piles from 120 to 190 ft are required. The top 30 ft of these steel piles will be encased in concrete.

Roadway slabs are divided into half-width sections each 27½ ft wide and 41 ft long, totaling 478 precast units. The deck is 7½ in. thick, cast integrally with four longitudinal beams 3½ ft deep, and two end diaphragms. Pile caps, out-

→
CONCRETE FOR SLABS and piles is placed by crane and bucket. Casting yard requires lots of big equipment, including, left to right: truck crane, Erie central batching plant with Worthington 34-S mixer, Wiley Whirley gantry crane for handling concrete and finished piles, Ohio locomotive crane serving mixing plant and reinforcing yard and also does yard switching, and special 50-ft gantry for handling 122-ton deck slabs.

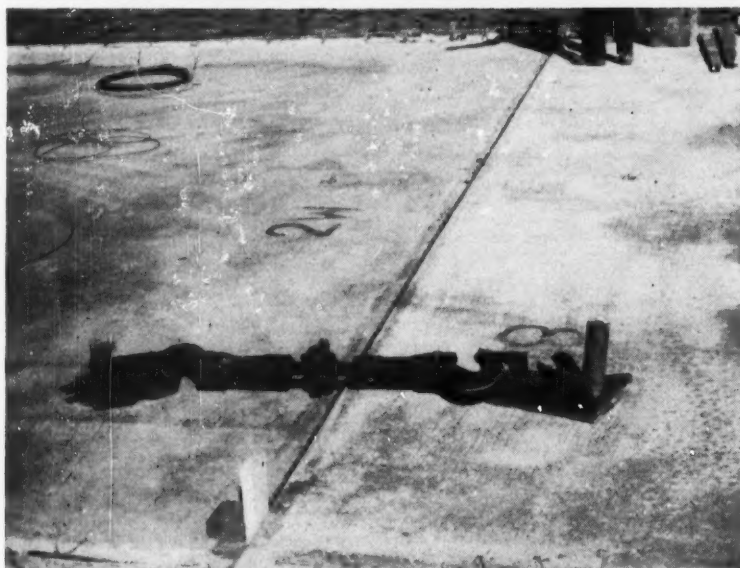
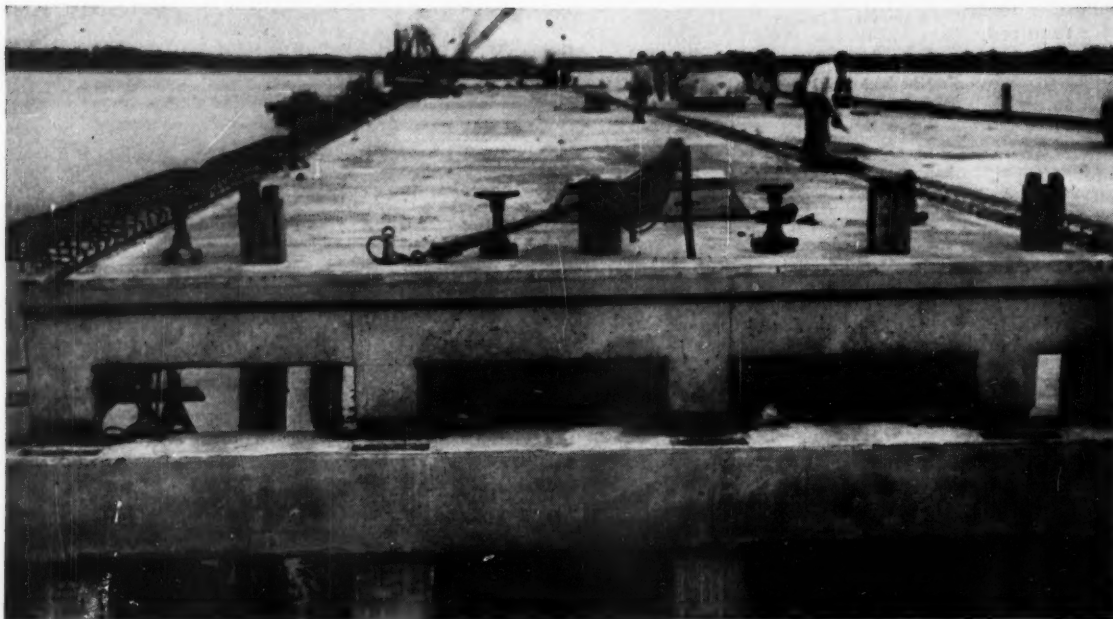


BIG GANTRY rolls precast roadway slabs from casting yard to slip where they are lowered to steel cribbing on barge for transportation to bridge site. Both steam from flash boiler and air from 500-ft compressor power lift hoist engines simultaneously; the air taking over when steam pressure drops as engines race to raise slabs through low gear reduction and the four 10-part hoist lines.



BARGE CARRYING a half-width deck slab slips into place between pile bents. When slab is exactly spotted over caps, barge will be flooded to lower slab into final resting place. Barge will then be pulled free and pumped out to restore full buoyancy. As bridge is on a uniform upgrade from shore to center, tops of caps vary in elevation, which accounts for plank shims on top of steel cribbing.





SLABS ARE LOWERED on to screw jacks engaging end diaphragm walls while shoes, cast into slabs at yard, are grouted to exact elevation. During setting, new slab is tied to finished deck by steamboat ratchets (left), with wood shim maintaining correct expansion joint opening. These joints will not be filled.

side and center curbs, and a cantilevered walkway along one side are poured in place.

When bids were opened for the project on June 5, 1951, Merritt-Chapman & Scott was lowest of four bidders, \$6,061,434 (changes have since kicked this up to 6½ million); next bid was \$6,454,316, and high was \$8,942,528. M-C&S apparently was the only bidder considering precasting the roadway slabs—and it paid off.

The contractor developed a casting yard on a swampy shore site along the L&N RR on the Pass Christian side of the bay by filling in with a hydraulic dredge. At the same time, barge slips were

dredged out at the shore end of the yard.

To accommodate floating equipment along the bridge right-of-way, this same dredge cut out a channel 250 ft wide to a uniform depth of 9 ft. Spoil from the west end was spread upon the shore to give the town of Bay St. Louis a nice new sandy beach for free.

The casting yard is laid out around two long gantry tracks ending at shoreline, one for the pile area, the other for slabs. At inshore end is the reinforcing fabricating yard and the concrete plant. This plant includes Erie bins, silo and batcher, a Worthington 34-S double-drum mixer, and a Rex dual

concrete pump. An Ohio steam locomotive crane serves the mixer plant and reinforcing yard.

Pile casting areas are served by a Wiley Whirley 50-ton steam gantry crane with 105-ft boom on 30-ft gage tracks. Piles are cast in several areas, all concrete paved.

Here's a clever trick in casting. Steel side forms are set up on the paving for alternate piles, spaced exactly 24 in. apart. Building paper on the pavement keeps the piles from sticking to the bottom. Forms are stripped the day after piles are cast, and the exposed sides and top of piles are sprayed with Hunt curing compound.

The intermediate piles are then poured, with the previously cast piles acting as side forms, and only steel taper end forms required. The Hunt curing compound prevents new and old piles from sticking together.

Concrete for all piles is hauled from plant to yard in dump buckets on trucks, and is placed either by the Wiley or Ohio crane. Piles cure for 21 days before being moved either into storage or to barges for transportation to the piledriver.

The neatest trick of the entire job is the way project manager Rod Hand has rigged up a special home-

made gantry to handle the 122-ton roadway slabs. This gantry, running on 50 ft.-gauge tracks, straddles a slab yard 660 ft long that accommodates 20 half-width slabs 27 1/2 x 41 ft. Slabs are cast in permanent forms, and all reinforcing is prefabricated into cages and mats. Lifting holes are cast into the slabs near each of the four corners for a 4-point pick-up.

On top of the gantry are two 2-cyl steam hoist engines driving a common shaft. The shaft, in turn, through small pinions for greater gear reduction, drives four hoist drums, each hooked to a 10-part hoist line. For better leveling control, the hoist lines operate in pairs, each pair hooked to a common lifting beam.

The original power installation for the hoists was a Vapor Heating Corp. flash boiler for supplying steam. However, it was found that, because of the engines racing to make up for the low gear reduction and the multiple-part lines, the boiler soon ran out of steam, long before the lift was completed. No other boiler was immediately available, but Hand did scare up an extra 500-ft Ingersoll-Rand air compressor. This he put on top of the gantry and connected it to a big receiving tank.

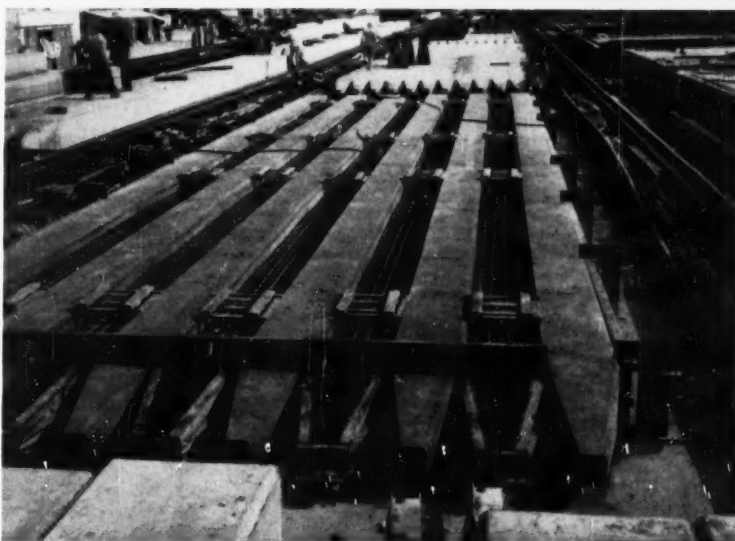
Combined Steam and Air Power

Now, during a slab lift when steam pressure falls off to 120 psi, the air kicks in, with both steam and air entering the hoist engines simultaneously. Thus, the steam-air pressure never drops below 120 lb, and the engines race merrily along. Hand says at first everyone on the job was skeptical about the installation—but it works.

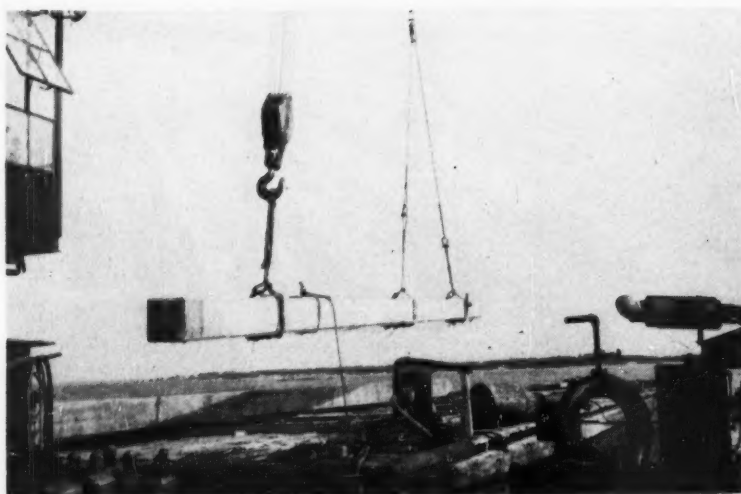
Slabs are not lifted until their concrete compressive strength has reached at least 3,000 psi. They are not stored, but are lifted and carried by the gantry to the barge slip. Here they are lowered to steel cribbing built up on a barge.

The barge and its load are towed to the bridge and carefully maneuvered into slab-placing position between two completed bents. Then the barge is flooded, and the slab gently comes to rest on a series of screw jacks on top of the caps. The barge is then pulled clear and pumped out.

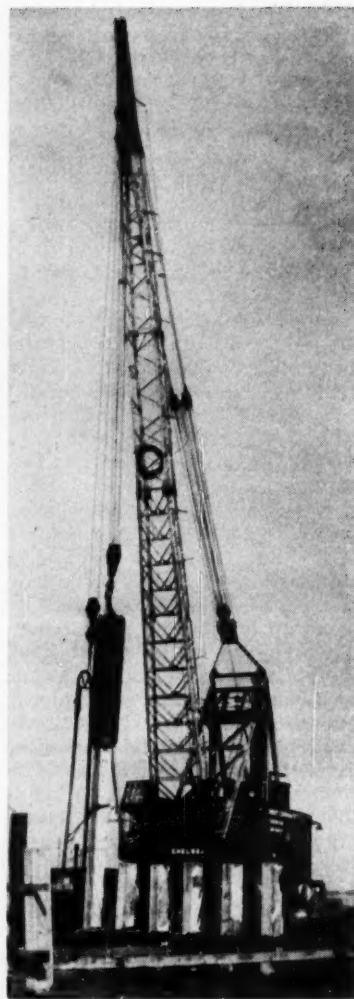
Steel bearing shoes (rocker at one end, fixed at the other end) are cast into the slabs at the yard. These fit into pockets in the caps. The jacks support the slabs until the shoes are lowered and then grouted to correct elevation. Steam-



PILES ARE CAST on concrete beds with steel forms for first set of alternately spaced piles (top). Paper is spread on bottom as insulation against bed slab. First piles are sprayed with Hunt curing compound, then alternate piles are cast without side forms (center). Steel H-beam piles up to 190 ft long are required for a few deep soft spots. The top 30-ft sections are encased in concrete (bottom).



PILEDRIIVER (top left) picks piles from barge by 3-point suspension, with main block holding top end to lift pile into driving position. At right is Griffin-Peerless jet pump outfit. Piledriver barge (bottom left) is tied into previously driven bent by timber frame that also supports pile template, thus assuring perfect spacing and alignment



in driving. It takes a big rig to handle and drive 24x24-in. piles up to 90 ft long, and this American Revolver crane and McKiernan-Terry 10-S hammer combination is it (right). Note size of hammer in comparison with men on barge deck. This also shows another view of timber framing and template system for lining up piles.



PILE CAPS ARE POURED in place inside of steel forms (left). Form crew, operating from work barge, also has responsibility of final alignment of piles and bents. Their radio telephone is powered



by Powerlite Aircharger windmill. Concrete for caps is placed with buckets barged out from shore by floating Manitowoc crane (right). Piledriver is at work just beyond completed bents.



PROJECT MANAGER Roderick Hand stands on eastern shore with his job stretching out in background (above). Driving double bents (right) is a ticklish job, as piles batter in both directions and end up awfully close together at top. Steel cap forms still remain on single bents.

boat ratchets pull and hold the new slab to the previously placed slab to maintain correct alignment and expansion joint spacing. Often the slab barge makes a round trip in $1\frac{1}{2}$ hr., an indication of how fast the slabs can be set.

Piles are loaded on deck barges, eight to a load, by the big Wiley crane at the casting yard. A 4-point suspension is used for pickup at the yard, with the piles always kept in horizontal position. Pickup points are three Richmond Screw-Ties that engage a pickup casting.

Two big piledriving rigs are each driving one complete single bent (eight piles) per day. One rig is the "Cree", a Wiley Whirley steam crane mounted on a barge. The other is a similar rig, the "Chelsea", mounting an American Revolver crane. Each piledriving barge carries a 6-in. Griffin jet pump outfit. Driving is by a McKiernan-Terry 10-S single-acting hammer.

After a pile has been driven to grade, the jet pipe and hammer must be lowered to the barge deck and disconnected, for both load lines of the crane are required to lift the next pile from its barge. One line (the eight-part hammer line) takes hold near the top end. The other line takes a 2-point suspension hold of the lower end. Then, as the pile is lifted and



swung around, the big line lifts it to vertical position as the other line eases off.

The pile is then dropped through a timber template, another neat trick. This template, with compartments for each pile in the bent, is mounted in a horizontal frame tied into the previously completed bent at one end, and the side of the piledriver barge at the other.

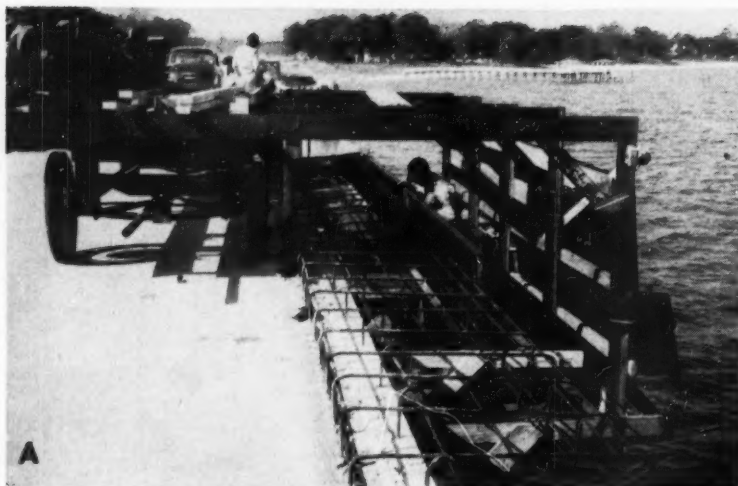
Thus, template and barge are anchored rigidly in correct relation to the last bent. No wonder the bents and piles line up perfectly. The powerful jet goes into action when driving begins to meet resistance.

Pile caps are poured in place within steel forms. Concrete is pumped from the central plant to buckets on barges at the pile load-

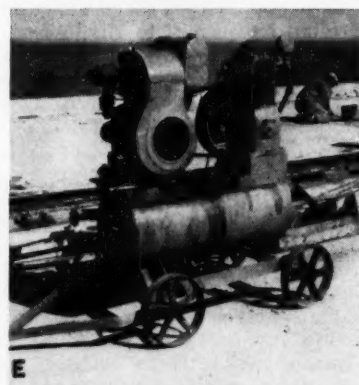
ing slip. The barges then are towed to the bridge, and concrete is placed by a barge-mounted Manitowoc crane. The cap building crew has the responsibility of final lining up the piles and bents. Template frames are left in place until deck slabs are set to make sure the bents stay in place and alignment until tied together by the deck.

The four piers for the bascule span are being built within sheet steel cofferdams. A barge-mounted Manitowoc crane handles concrete in buckets, barged out from shore, and also drove the sheeting and clammed out the excavation. Piledriver "Cree" was pulled off bent driving long enough to put down the 18-in. sq. foundation piles at bottom of cofferdams.

All floating plant, tugs and the



CURBS AND WALK ARE POURED in place after deck slabs are set. **A**—Walk forms, along one side of bridge only, are cantilevered out from slab face. Form crew works from cantilevered rolling scaffold. **B**—Outside curbs poured in rigid steel forms will be topped with aluminum railing. **C**—Concrete for curbs and walk is delivered to place by Maxon Dumpcrete trucks after hauls as long as 3 mi from central plant at casting yard. **D**—Center dividing strip curb needs only curved side forms, made up of curved plate welded to angle struts that are weighted down with sandbags to hold them in place, no bolts are needed. **E**—A Hand Special compressor (designed and accumulated by the project manager himself) consists of old pump engine, and a nondescript compressor welded to an air receiver, all wheel-mounted, Hand uses the rig for blowing out forms and expansion joints.



job office on shore are inter-connected by radio telephone. At stations having no power source or generating equipment, radio batteries are kept charged by Powerlite Air Charger windmills.

Side and center curbs, and the walkway are poured in place with concrete hauled from the central plant in Maxon Dumpcrete trucks. For the west half, this means up

to a 3-mi haul across the old bridge and back down the new structure.

Roderick Hand has a fine crew of Merritt-Chapman & Scott old timers with him on this job; E. H. Woolwine, project engineer; R. P. Neely, office manager; W. F. Cooper, yard superintendent; Capt. J. I. Tooker, marine superintendent; and John Mills, cofferdam superintendent.

C. S. Hill is resident engineer for Hazelet & Erdal. The Nashville Bridge Co. holds the subcontract for fabrication and erection of the bascule span.

Little Rig Deepens Cellar After Entry Thru Window

IT WAS ONLY A SMALL JOB—some 2,000 yd of rubble and dirt to be moved. But it was a tough one—deepening a basement to which the only access was a less than 3½-ft opening that could not be widened. Solution was to dismantle a small tractor-shovel, move it inside piecemeal, then re-assemble it to dig the hole. Fitted with a fancy catalytic exhaust unit, the machine's gasoline engine could operate safely and quietly in the enclosed, confined space.

New York City's Cummins, Coakley & Booth, Inc., did the fussy job for the local Madison Avenue Presbyterian Church. A 65x90-ft section of the basement there, with floor 10 ft below street level, had to be deepened 5 ft to accommodate a new assembly hall. Half of an adjoining 22x100-ft room had to be similarly deepened, while the other half was to be taken down 10 ft for a boiler room. Clearance was as little as 10 ft between columns.



TRACTOR-SHOVEL IN CHURCH dumps spoil from basement deepening operations into chute in areaway window through which machine was squeezed into job. Tin-lined chute has horizontal boards that are removed as hole deepens, so loader can still reach it to dump.

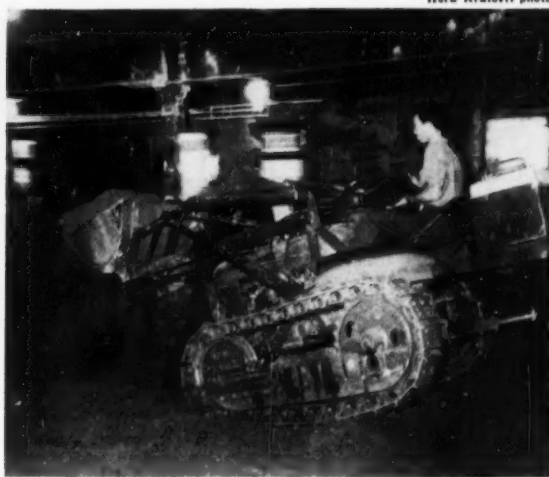
Basement windows and exterior doors were no bigger than 3 ft 5 in. wide by 6 ft high. They could not be enlarged, because one of the job's strictest requirements was that the church's ornamental limestone facing remain completely undisturbed. Another complicating factor: Windows and doors opened into a depressed areaway only 4 ft 2 in. wide running alongside the building. All in all, it

was a difficult site to get to and to dig in.

After figuring hand excavation, CC&B discarded it as too expensive. Next investigation turned to horses and drag scrapers. A couple of slips and a plow (to loosen the material) were bought, and a team lined up for rental. However, an even cheaper solution turned out to be an Oliver OC-3 tractor fitted with a Ware ½-yd front-end

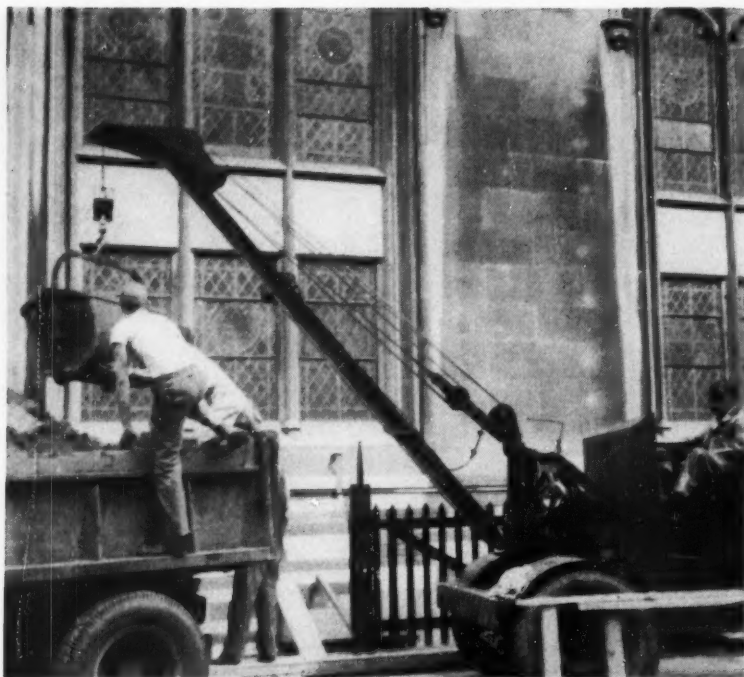


OLD TOOLS AND NEW are both at hand on Cummins, Coakley & Booth interior excavation job. President W. S. Booth and Superintendent Walter Larsen stand by plow and pans that are ready

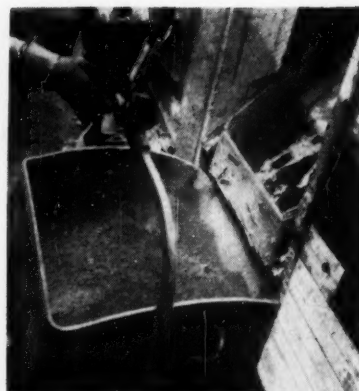


should horse power become necessary. However, little Oliver tractor was able to handle the job unaided after it was brought into the basement through a window only 41 in. wide and 72 in. high.

Herb Kratoch photos



CRANE ON SIDEWALK lifts spoil from areaway, dumps it into 5-yd truck for removal. Putting both of these comparatively light pieces of equipment on sidewalk left busy New York City street clear for regular traffic. Small trucks eased haul in crowded Manhattan.



LOADING CHUTE that directs spoil into $\frac{3}{4}$ -yd coal tub handled by crane is fitted with hinged bottom flap to stop spillage.

loader. This little (22-hp, 4,000-lb) tractor was 52 $\frac{1}{4}$ in. wide, but it could be narrowed to pass through one of the 41-in. windows by removing one track and side-frame.

Delivered to the job in this shape, the machine was snaked inside. A 2 $\frac{1}{2}$ -ton industrial-type crane on the sidewalk slung the rig nose down in the narrow area-way, while the front end was

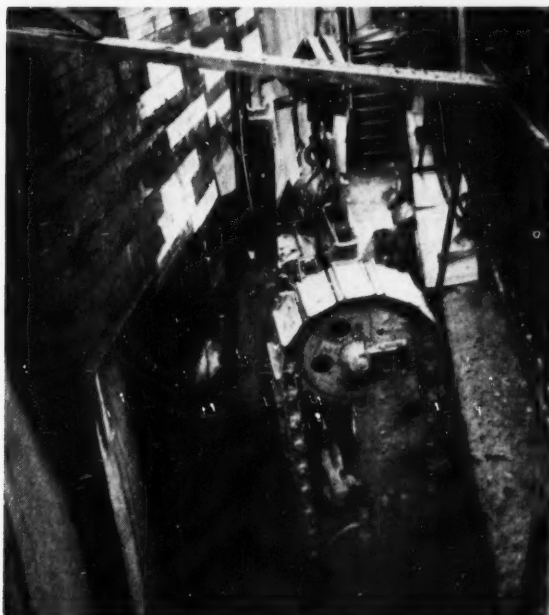
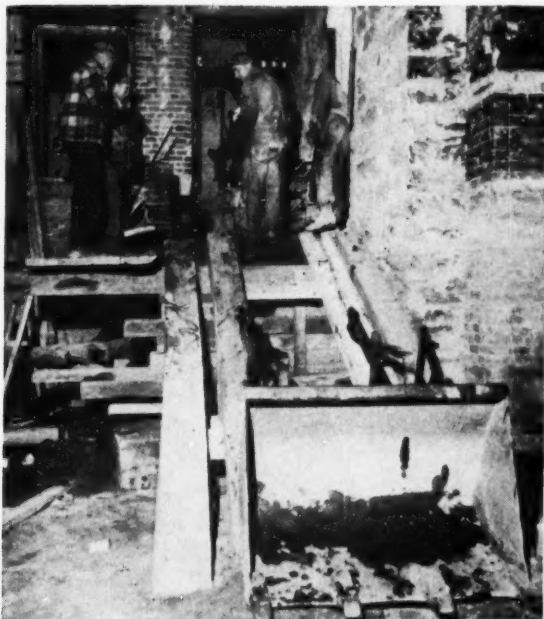
pulled ahead through the window by a hand crab inside the basement. Careful coordination between crane and crab was necessary to turn the tractor 90 deg in a vertical plane, half in and half out of the window. Once the tractor was landed horizontally, the track-less side was rested on blocking, and the machine inched into the clear in the basement. Attachment of track assembly and loader



CATALYTIC EXHAUST UNIT on tractor-loader lets its gasoline engine operate indoors without any odors or poisonous gases.



MOST DIFFICULT PART OF JOB was excavation of deep section (behind camera) that had to be taken down 5 ft below the rest. Tractor-shovel has already made approach cut (rear) to this section and 3-ft rubble wall has been breached so rig can work its way in.



REMOVING TRACTOR FROM BASEMENT through window opening into narrow areaway is a ticklish job, as was its entrance in similar manner. Run up ramp on to cribbing inside window (upper left).

rig gets loader and one track assembly removed. Then line from crane hauls it out tail first and swings it vertical while tag lines inside prevent front end from sliding out too far or fast.

prepared the rig for operation.

Because the gasoline-powered tractor was to operate indoors, it was fitted with an OCM catalytic exhaust unit. This was relatively expensive (\$230 installed), but it removed all odor as well as carbon monoxide and other noxious gases so the work could be conducted safely and in a fume-free atmosphere.

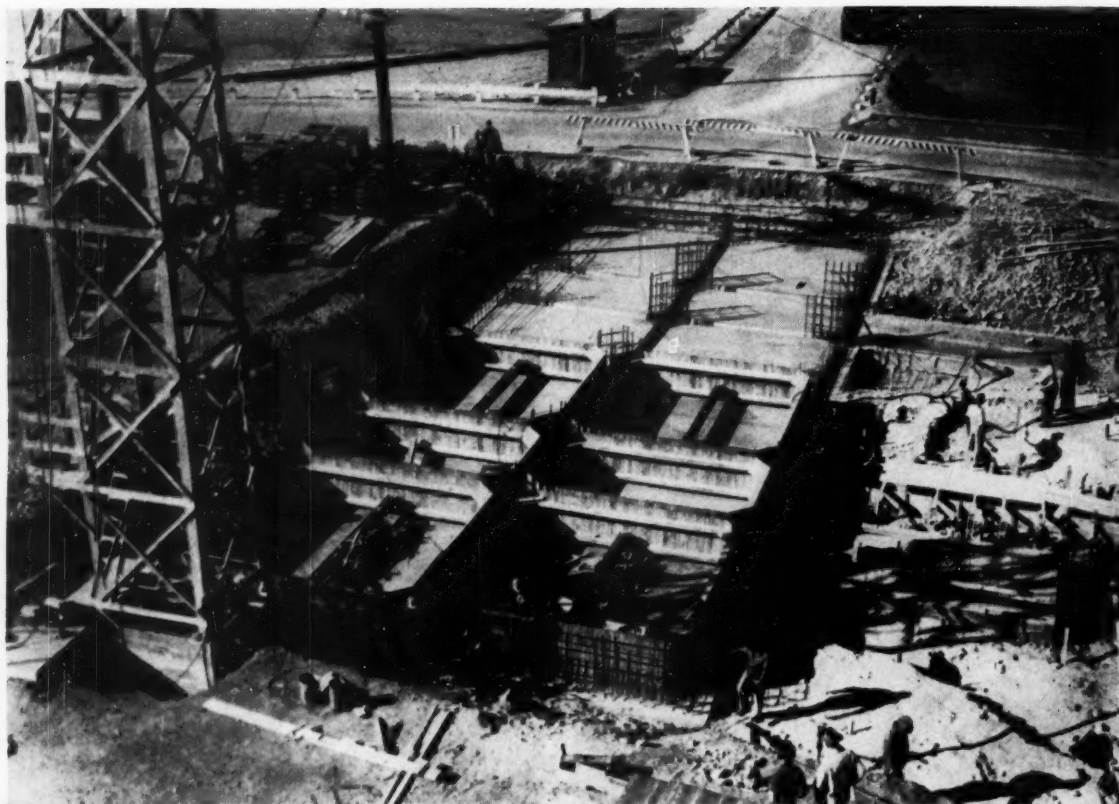
The $\frac{1}{2}$ -yd tractor-loader operated two shifts to average 75 place-yd daily. On the night shift

it stockpiled spoil near the entrance window, on the day shift it loaded this material out. A hopper and chute through the window directed the spoil into the areaway where it fell into a $\frac{3}{4}$ -yd Navy coal tub (a relic of the days when the fleet was coal-fired). The tub was hoisted by the industrial crane and dumped into 5-yd trucks for disposal.

On completion of excavation, the tractor-shovel was run up a timber ramp to a cribbed platform

at sill level just inside the window. There it was partly dismantled again. Then, in a reverse of the entrance procedure, the machine was moved out and up to the street.

General contractor for the church renovation was Vermilya-Brown Co., Inc., for whom A. A. Young was job manager. Walter Larsen was superintendent for Cummins, Coakley & Booth, Inc., on the interesting excavation subcontract work.



SETTING SLIP-FORMS over footings and floor slab laid over basement. Cellular structure of stone storage silo has two rows with 4

bins each, two measuring 17 ft square and two 10x17 ft. Center openings are shafts for transfer of material.

Continuous Pour Raises Silo Fast

By JAMES W. MACDONALD, President, Macdonald Engineering Co.

SLIDING FORMS and a continuous pour erected in eight days a stone-storage silo 127 ft high, measuring approximately 115x37 ft on the sides. Capacity of the structure is 10,250 tons of crushed limestone quarried by Basic Refractories, Inc., Maple Grove, Ohio, and later processed into refractory linings material. Macdonald Engineering Co., Chicago, was the contractor.

The monolithic storage unit is a cellular structure consisting of two rows of rectangular bins. Each row has 4 bins 17 ft square and 2 bins 10x17 ft, for a total of 12 bins. The concrete bin walls are founded on footings placed on solid rock. Below the bins are open basements 14 ft high providing space for withdrawal spouts and proportioning feeders.

These deliver raw mix in proper proportions to two large rotary

kilns where the limestone is burned to a clinkered dolomite, a basic refractory for use in lining and repair of hearths and metallurgical furnaces. Above the bins is an open room, or monitor, housing conveying and distributing machinery which delivers the stone to the individual cells or storage bins.

The walls of the bins, which are 11 and 12 in. thick, were formed by building rectangular wood forms to the size and shape of the individual cells and placing them on the foundation slab (basement floor). These forms are 4 ft high, consist of tongue-and-grooved sheeting supported on 2x8 walers.

Adjacent form walls were locked together with steel yokes placed about 7 ft apart, straddling the walls and fastened to the 2x8 walers with 5/8-in. steel lift bolts. These yokes served to hold the in-

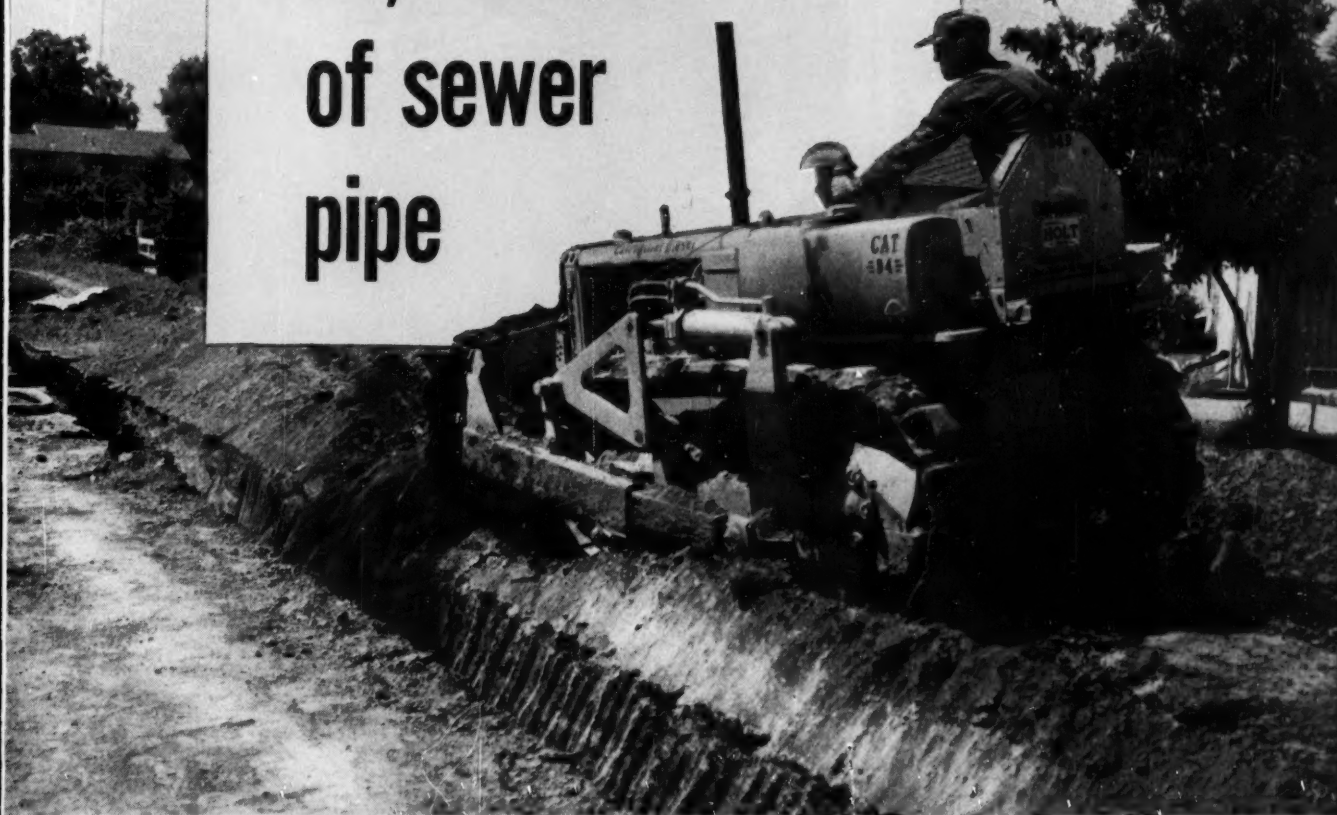
dividual bin forms in place, maintained exact wall thickness and supported slip-form lifting jacks.

A Thomsen-Simplex slip-form jack was mounted under the top cross-bar of each yoke and rigidly held with bolts. These jacks follow the principle of a ratchet-type pump-track jack, except that they climb a special rack which is fastened securely to a pipe sleeve. The pipe sleeve is slipped over a vertical 1-in. round rod and held firmly in place with an eccentric dog.

When the jack has climbed the full length of the rack, about 18 in., the pipe sleeve and rack are raised on the vertical rod, dogged off, and the climbing operation continues. The vertical rods rest on the foundation slab and are made continuous to the full height of walls by placing one rod on top of another and connecting the ends

(Continued on page 66)

Tucking in 12,000 feet of sewer pipe



No big equipment is tied up in this backfilling operation of a sewer installation in Stockton, Calif. The job is being done without strain by a hustling, powerful Caterpillar D4 Tractor equipped with a No. 4A Bulldozer.

The big equipment is out on bigger phases of the project. That's the way it should be. But to replace big tractors with small, you need a rugged, compact unit like the Cat D4 Tractor and 'Dozer owned by D. A. Parrish & Sons of Stockton.

After this barrel-chested unit finished backfilling 12,000 ft. of 10-in., 8-in., 6-in. and 4-in. pipe laid for a new sanitary district covering 20 square blocks, R. V. Parrish reported:

"The hydraulic angle blade handles like a charm and is especially useful on this type of work. This wonderful team enables us to get a lot of work done fast and well."

High praise? Sure, but it's understandable to anyone who has had a dependable, tenacious D4 Tractor

working for him. Powered by an economical 4-cylinder Caterpillar Diesel Engine, its full load governed speed is 1,400 r.p.m. It develops 43 drawbar horsepower and 48 belt horsepower. And the No. 4A Bulldozer can be angled into three positions by one man.

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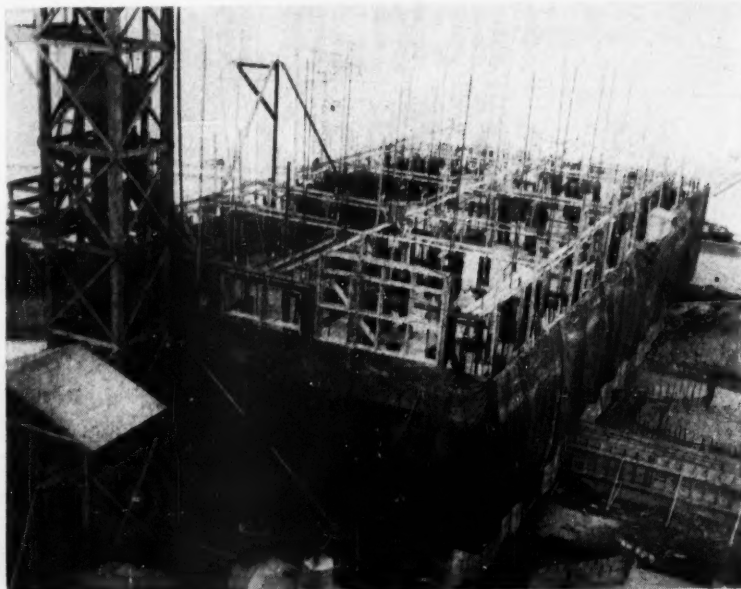
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CONTINUOUS POUR. Ratchet jacks raise forms, work platform. Concreting was done in freezing weather, walls kept warm under tarpaulin by boiler in foreground.



HALFWAY UP, a smooth monolith appears. Concrete mixer at base of wood hoist tower pours directly into skip bucket which delivers into hopper serving hand buggies inside forms.

with corresponding pipe sleeves.

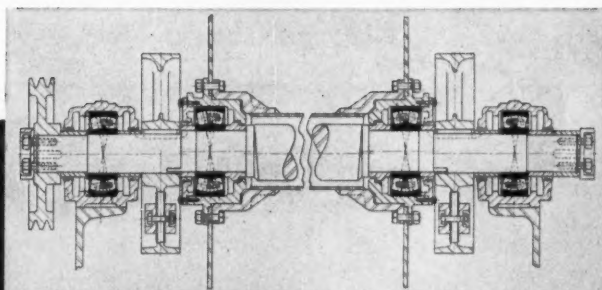
With every pump of the jack, form and working platform are raised $\frac{1}{4}$ in. Jacking is continuous 24 hr per day so long as concrete is being poured into the top of the wall forms. Speed of jacking is regulated so that the concrete has set by the time it emerges below the 4-ft form.

On this job the walls were

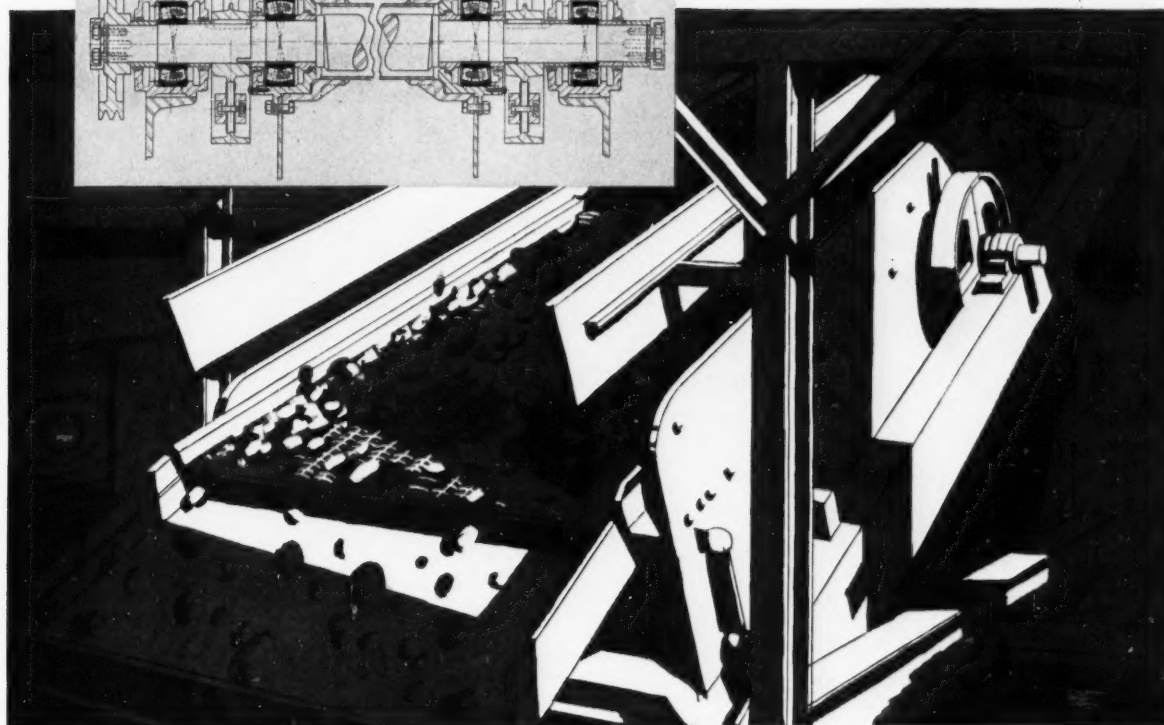
poured in freezing weather. Concreting materials were heated and the poured wall protected against frost by tarpaulins hung around the entire outside perimeter of the building to retain heat supplied by steam pipes suspended directly below the forms.

The open room under the bins used as a basement, and the room
(Continued on page 68)

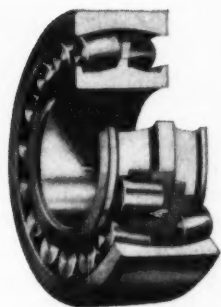
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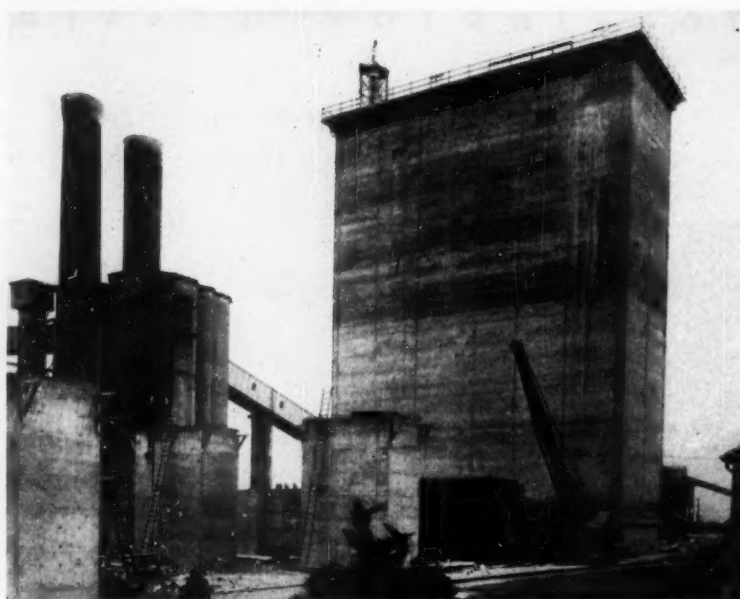
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FINISHED PRODUCT towers 127 ft high and has sides 115x37 ft. It is located conveniently to smaller silos and conveyor. Piers in foreground will support rotary kiln.

over the bins used as a monitor were constructed by blocking off cross-walls and carrying inner form walls empty for the desired height of the room. When it was necessary to start the beams or walls again, a soffit was placed in the forms, full width, and supported on 4x4 shores. The concrete walls were then poured over these wood soffits.

Aggregate Was Right

The crushed rock and crushed limestone sand used was supplied by Basic Refractories, prepared at its plant to pass all Ohio State highway requirements. It proved exceptionally workable on this slip-form concrete, an important consideration for proper manipulation of the forms and to get the speed attainable in this type of construction.

Dry batches were delivered from Johnson batch bins to a Worthington Blue Brute 1-yd mixer located at the base of a wood hoist tower 150 ft high. Concrete was hoisted by a Thomas hoist to the working platform in a 1½-yd bucket of the contractor's own design. It emptied into a deck hopper, and the concrete was distributed to the various wall forms by 6-ft, rubber-tired concrete carts. It was spaded into place.

Reinforcing steel was piled conveniently at the side of the building on the ground and hoisted to the deck as it was needed in the

concrete. Some steel was carried on steel racks above the jack yokes, to provide an immediate supply in case of emergency.

A Bucyrus-Erie 22-B crane kept the batch bins supplied with aggregate. The scales were enclosed and the bins heated with steam. Concrete was poured and maintained at 70 deg and showed test strengths from 3,000 to 4,000 psi in 28 days.

The monolithic construction of the walls required only 8 days, in spite of adverse weather. The entire construction of the stone bins complete required 3 months.

There are two similar sets of bins in the new plant at the opposite end of the rotary kilns, one used for storage and loading of calcined products and the other for storage and handling of coal for fuel in the kilns. Similar slip-form structures have been designed and built for Basic Refractories by Macdonald Engineering over a period of 30 yr—including the main crushing plant that consists of a 30-ft silo, sunk into solid rock 60 ft in the ground and immersed in water.





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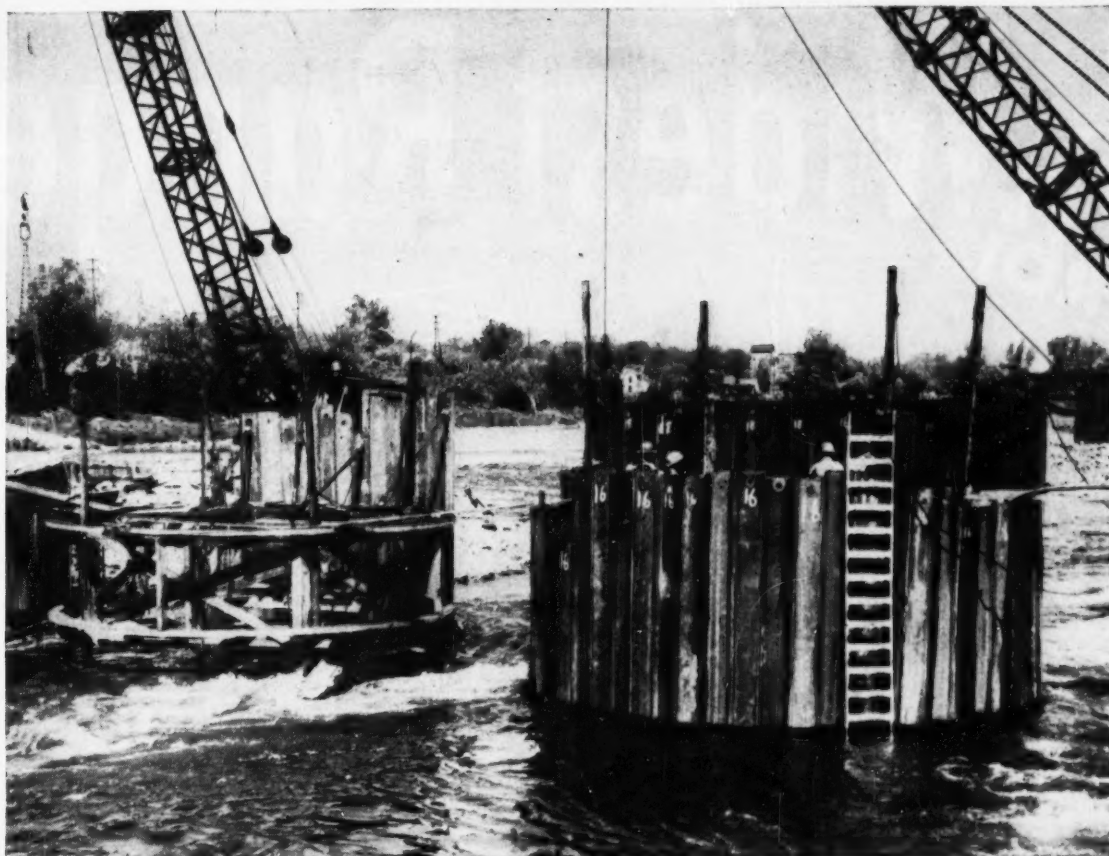
CITY STATE



Water Tops 600-Ft Dam Built in 52 Days . . .



. . . To Replace Timber Crib That Failed



TIMBER TEMPLATE rests on bottom of stream as 60 interlocking sheet piles, averaging 15 ft in length are driven to bedrock around it. Piledriving, with McKiernan-Terry No. 7 hammers, was done with two rigs, one from each bank working toward the middle.

By F. L. FLOOD, JR.
Engineer, The Contracting Division
Dravo Corporation

ZANESVILLE, OHIO, got a new dam, but quick—thanks to a civic-minded community that voted for fast action and to the Contracting Division of the Dravo Corporation, Pittsburgh, Pa., which handled the construction in 52 working days.

Last spring, the city's 11-year-old, rock-and-earth-filled timber crib dam on the Muskingum River failed, leaving a 45-ft gap in the middle. Immediately there was a drop in the water table of the municipal water supply, fed by gravel-packed wells. Recreational values on the river fell off as the pool dropped from 3 to 6 ft for several miles upstream. Although the river lock system had found little use, there was at least one sand and gravel company that loaded barges through regularly.

Zanesville (population about 50,000) quickly voted a \$250,000 bond

issue to match a last minute \$250,000 appropriation for the dam by the 82nd Congress. Dravo Corporation submitted a low bid of \$188,883.50—based on plans and specifications prepared by the Corps of Engineers. The contract required completion of the job within 100 days from date of award.

A shovel and trucks were hired locally for two days, and the levee on the west river bank broken through. A locally recruited pile gang had been hired earlier and, in a yard rented from the B&O Railroad, was unloading cars of sheet pile with a Northwest crane. Sheet pile for the most part was furnished by the Government.

The 600-ft long dam consists of 16 concrete-filled, interlocking sheet-pile cells 25 ft 5½ in. in dia, each containing 60 sheets averaging 15 ft in length; 15 closure arcs containing 28 piles each; and three oblong cells forming the west abutment, with two containing 26 piles and the one nearest the levee containing 16 piles. The east abut-

ment is of mass concrete tying into the lock wall.

Scope of the project, in addition to the dam proper, involved 8,000 cu yd of excavation for access roads. Total concrete requirements were 6,300 cu yd. All construction equipment was railed to the site from Pittsburgh.

The initial step was construction of substantial access roadways, or earth berms, on the river bed. The first road constructed was on the east bank, starting about 500 ft above the damsite. A Link-Belt K360 crane with clamshell moved to the east bank and began cleaning out the old canal bed which formed part of the river lock system. This made it possible to work the guard gate at the location. After the sill was cleaned, the gate was put into operation.

Upon completion of the work at the guard gate, the same rig started excavation for the dam at the site of the east abutment and Cell No. 16. At the same time, carpenters were constructing a

(Continued on page 74)



Widest Range



Now Le Roi 125 cfm Airmaster air compressor work cutting costs. The two model 52 Le Roi-CLEVELAND breakers get plenty of air, break concrete faster, and reduce the time spent on the job. You save.

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NOW you can get more air capacity for less money! Now you can match your job requirements *exactly* with the portable compressor that lets you do the most work at the least cost! For now, thanks to Le Roi's expanded Airmaster compressor line, you have the industry's widest range of sizes to choose from!

The new Airmasters in this famous line fill present-day gaps in your air-power needs. As you know, some of the standards established years ago for air-compressor sizes are inadequate today. Bigger breakers, faster rock drills, air-motor controls, etc., eat up the reserve formerly provided by these ratings.

But you don't have to penalize yourself by working with pressures that are too low — or by operating a machine that's too big and too expensive for the job to be done. You can get a Le Roi that's exactly right for size.

Have your Le Roi distributor show you why you're ahead with an Airmaster *any way you look at it* — for adequate capacity, for minimum investment, for economy, for trouble-free operation, for long operating life. *Write for bulletins.*

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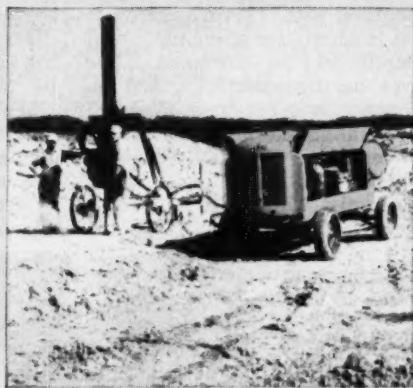
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YOU AIR-EQUIP YOUR JOBS FOR GREATEST PROFIT!



New 250 cfm — Diesel-powered. Operates two lightweight wagon drills, like the Le Roi-CLEVELAND DR-34, or one heavy wagon drill, like the Le Roi-CLEVELAND DR-30. Price is same as former 210 diesel.



New 365 cfm — Gas and diesel units replace 315-cfm models. Extra capacity handles many applications that formerly required a 500. Here it runs a Le Roi-CLEVELAND DR-30 wagon drill for deep holes.



600 cfm — These heavy-duty diesel units have plenty of capacity to help you get extra footage from your wagon drills and hand-held tools. The 600 shown here operates two Le Roi-CLEVELAND DR-30 deep-hole wagon drills with plenty of air to spare for other tools.



TREMIE BUCKET with 1 yd of concrete is lowered to bottom of sheet-pile cell. The job used 6,300 yd of local transit-mix with the trucks backing up to the site on timber mats.



TEMPORARY BULKHEAD for water stop between cells is released from crane hook. Water flow between cells made it difficult to drive closure arc sheeting without these timbers.

timber template on the east bank for setting sheet pile. This was set in shallow water at Cell No. 16 resting on bed rock. A Caterpillar D8 dozer was constructing the access road on the east bank during the above operation.

A night shift was added and excavation started at the west bank. Another Link-Belt K360 crane, with drag bucket, was used on the west side. When excavation was completed on the west bank, two additional templates were constructed—one at the site of Cell No. 1 and the other at the site of Cell No. 3. All templates were reused. The sheet pile, burned to the required lengths, was trucked to the cell sites from the rail yard.

Construction of the sheet-pile cells now was under way from both east and west banks, heading toward a closure point in mid-stream.

Good rock penetration was possible on the east bank with more than 1 ft obtained at most cells. On the west bank, however, the sheet pile for Cells 1, 2 and 3 bounced on the hard limestone before penetration of from 2 to 3 in. finally was accomplished. A McKiernan-Terry No. 7 pile hammer

was used to drive all of the piles on the job.

Ready-mix concrete was furnished by Adams Bros. Inc., of Zanesville. From the first to the last pour there were only five working days during which no concrete was placed. A 1-yd tremie bucket was used for concrete placed under water. Two 1-yd buckets were interchanged for out-of-water concrete.

The Mix

Underwater concrete was a 6½-sack mix with 1½-in. aggregate used in all grades of concrete. The concrete was air-entrained, using Darex as the admixture, and all aggregate was obtained from the Zanesville Sand and Gravel Co. The concrete between the 6½-sack mix and the cell cap was a 3-sack mix. The top 18 in., or cap, was 5-sack mix.

At the downstream face of the west abutment cells, 70 tons of derrick stone were set for protection along 26 ft of the levee. This wall was 6 ft wide with a top course of 10 ft. The derrick stone was well chinked and was left uncovered.

Concrete was cured with wet

sand applied to the cells, upon initial set, to a depth of approximately 6 in. Each cell was cured for 14 days with water applied once each 24 hr. In two cases of cold weather, a tarpaulin was laid over timbers and the concrete heated with five kerosene lanterns. The sand cure was applied to these cells with 24 hr of the initial set.

Water in the pool began to rise immediately after the closure arcs in the center of the channel were placed. As soon as concrete was placed in arc C-10, equipment was moved from the east bank and a diversion channel dug to the existing canal. This canal was expected to carry much of the water when the pool rose, but was not able to do so because of the settlement of suspended silt when the water had receded.

Actually, water flowed through the canal about the same time the pool was filled. During construction, wood sheeting was removed from the upper lock gate to facilitate diversion of the water. It was replaced before the canal filled when it became apparent that the canal was not required for diversion purposes.

(Continued on page 76)

Ever Think of "Downtime" this Way?

When one of these are down
these operate at a loss too!



Pick Buda Diesels to keep your equipment moving

Downtime on a big haulage unit costs money—but when it causes other equipment to wait or operate at less than peak efficiency—downtime really cuts into profits!

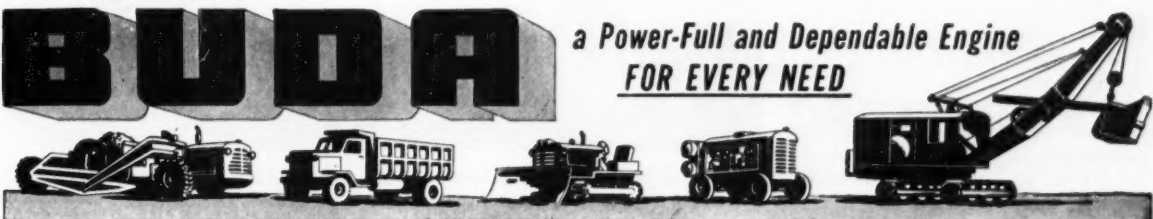
Buda Diesels' clean design...fewer parts, simple fuel system and heavy duty construction keeps them running longer at lower cost...with less maintenance and downtime. Buda Diesels are built to give you ideal working performance...extra power for occasional overloads...higher torque at proper speeds—and an average of 6000 hrs. between overhauls.

Ask your Buda Engine Distributor for information on Buda Diesels for any type of construction equipment. Write for Bulletin 1526 and specifications today.
The Buda Company, Harvey, Illinois.

BC-22

BUDA

*a Power-Full and Dependable Engine
FOR EVERY NEED*





NEARING COMPLETION. Last cell in midstream is being filled with concrete and remaining closure-arc piling is being set. There are 16 main cells 25 ft 5½ in. in dia; 15 closure arcs; and three

oblong cells to form the west abutment. Access roadways were constructed from each bank toward midstream for cranes and trucks and later cast back with a dragline as the pool rose.

Before the closure arcs were set between the main cells, water flowing between the cells made it difficult to place sheeting. To overcome this, a timber bulkhead 14 ft by 12 ft was placed in the opening resting against 7x4-in. angles welded to the cells. The water-head kept the bulkhead in place as arc sheets were being set.

As the closures in the center of the channel were completed, the access roadway was cast back with the dragline, and a dike constructed to keep out the water. Each day a new ramp was built to keep equipment clear of water as the pool rose.

A corduroy road had been constructed out through the pool and the Link-Belt crane rested on a pier constructed from a tier of three mats. Concrete trucks used the same road and backed on to a ramp also constructed of mats. The mats were 12 to 14 ft long, and were made of three 12x12 timbers bolted together.

For Dravo on the project, E. E. Weeter was superintendent; C. D. Hodges, office manager, and the author was engineer. Representing the Corps of Engineers was E. M. Snyder, resident engineer.



PERCHED ON A PIER of timber mats, only inches above the water, Link-Belt Speeder claws out remains of access road and pulls up its own corduroy road behind as it retreats shoreward.



*teamwork
in
specialties*

THE BLASTER

**CRUCIBLE HOLLOW
DRILL RODS**

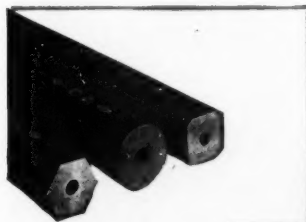
In rock-drilling operations, the blaster is a key man. He plans the blast, tells the drill-runners where to drill their holes, loads the charge for the greatest effectiveness.

He expects . . . and gets . . . peak efficiency from his men and the tools they use.

This is why Crucible Hollow Drill Rods rank first with crews supervised by top-notch blasters. Experience has shown them that Crucible rods stand the rapid-

fire battering of modern rock-drilling longer; give them the least breakage, the greatest service life.

Crucible Hollow Drill Rods are right for the job because they are made by the world's largest producer of *tool and high speed steels*. From this metallurgical experience come the high mechanical properties that have set record after record for least cost per foot drilled. Use Crucible Hollow Drill Rods in all your drilling operations.



CRUCIBLE

first name in special purpose steels

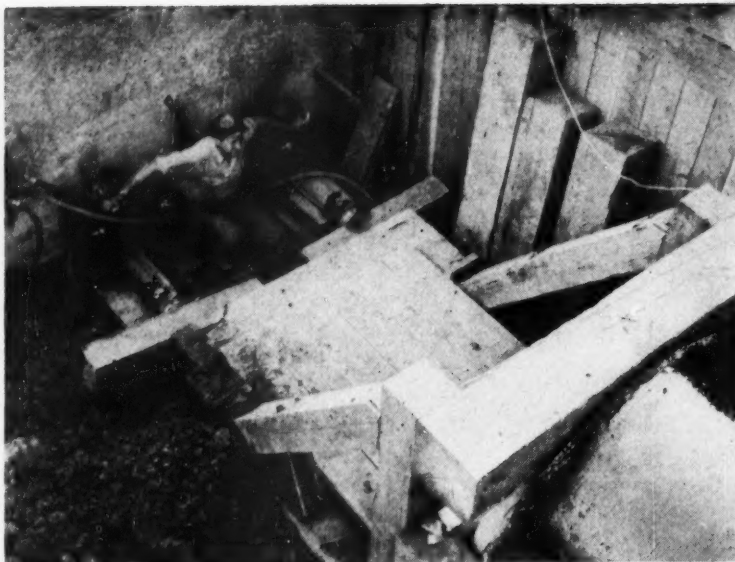
HOLLOW DRILL RODS

52 years of *Fine* steelmaking

CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA.

REX HIGH SPEED • TOOL • REZISTAL STAINLESS • ALLOY • MACHINERY • SPECIAL PURPOSE STEELS

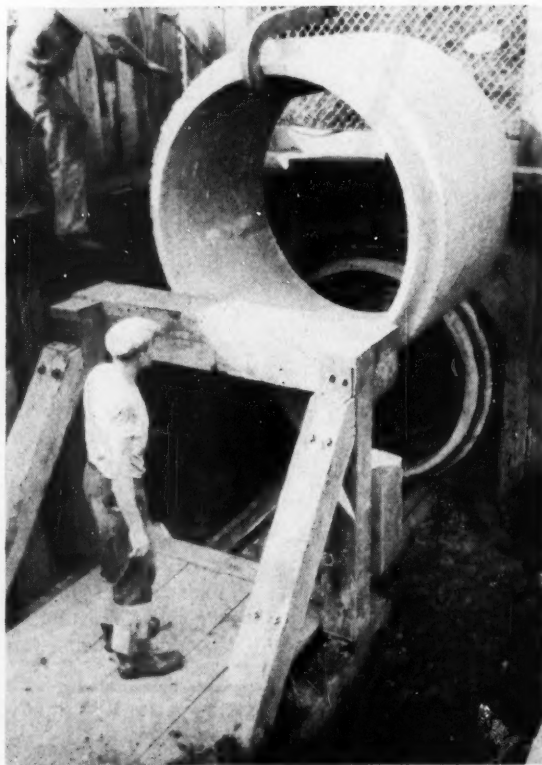
•The job was to drive 108 ft of 60-in. reinforced concrete pipe through the Central Railroad's 4-track embankment at Fanwood, N. J., for the township of Scotch Plains. Some 19 ft below rails and on a slight upward slope, the pipe was pushed 82 ft of the way by two 100-ton Joyce air-powered screw jacks. The rest was done in open cut. How contractor Angelo Fastiggi & Son Inc., of Cedar Grove, N. J., handled the jacking on its \$15,700 sewer job is shown in the accompanying illustrations.



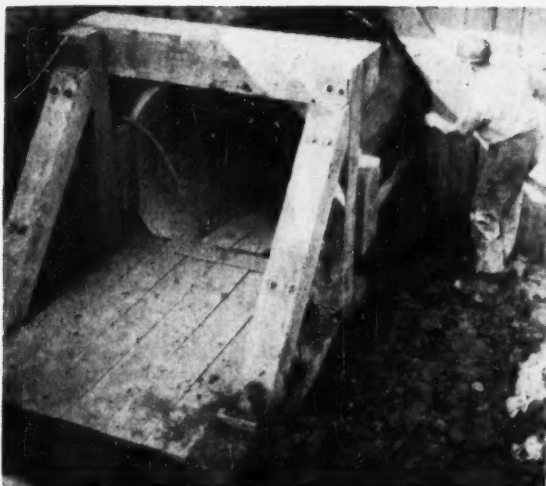
Air Jacks Push Pipe Through Embankment



PIPE IS HANDLED by hairpin hook slung from Bucyrus-Erie 22-B crane after delivery from near-by Lock Joint Pipe Co. plant. Each 4-ft section of this 60-in. ID concrete pipe with 6-in. reinforced wall weighs 3,600 lb. Railroad is at the rear.



SECTION IS LOWERED into 12x20x10-ft deep jacking pit that is sheeted and floored with 3-in. plank. Some 20 tons of broken stone below floor gives good drainage. Track on which pipe rests and jack frame rides is timber armored with steel plate.



PIPE IS LUBRICATED with asphaltic paint before push to lessen friction. Jacking frame is of bolted, well-seasoned oak 12x12s. Frame's face bears against pipe's lip and shoulder.



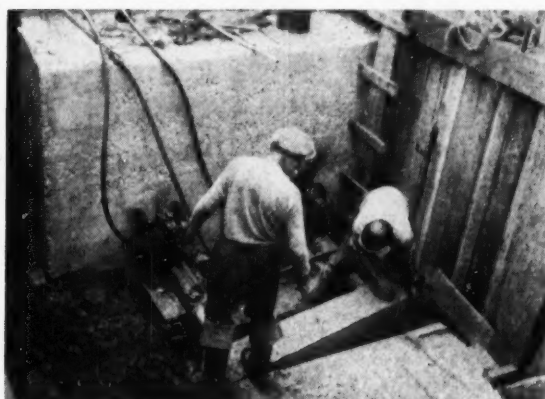
JACKS ARE EXTENDED or retracted by air motors operated by 210-ft Chicago Pneumatic compressor. Normally used for lifting diesel locomotives, 100-ton Joyce jacks have 30-in. stroke.



FACE IS MUCKED OUT by hand as Ingersoll-Rand spade run by 105-ft LeRoi compressor loosens sandy, bouldery clay. Cutting edge on pipe end is 10-in. wide band of 1/2-in. steel plate.



SPOIL IS DUMPED into jacking pit from which it will be clammed out. Job works three shifts daily, advances average 7 ft in each. Wincharger generator supplies night-work light.



BLOCKING IS ADDED as necessary between jacks and frame, as pipe is pushed into embankment. Blocking timbers are generally 12x12-in. aged oak. Abutment at rear, which takes reaction of two jacks, is 10-yd, 10x12-ft concrete block 40 in. thick.



FRAME IS RETRACTED by wire rope from crane through snatch block anchored to abutment, so next pipe length can be inserted into line. Resting on top of self-retracted jacks is 1/2-in. steel plate that will be placed to prevent rams crushing frame.



P&H

**TRUCK
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STABILITY

pays off on jobs like these

Whether you're lifting or swinging peak loads, P&H Truck Cranes give you that extra stability that means extra capacity — extra safety — extra profit. And this means all around the full 360 degrees of operation — the basis upon which no P&H Truck Crane, size for size, has ever been outlifted.

With P&H Hydraulic Control you have the fast, smooth, responsive action which lets you "feel" the load for swifter, more precise handling.

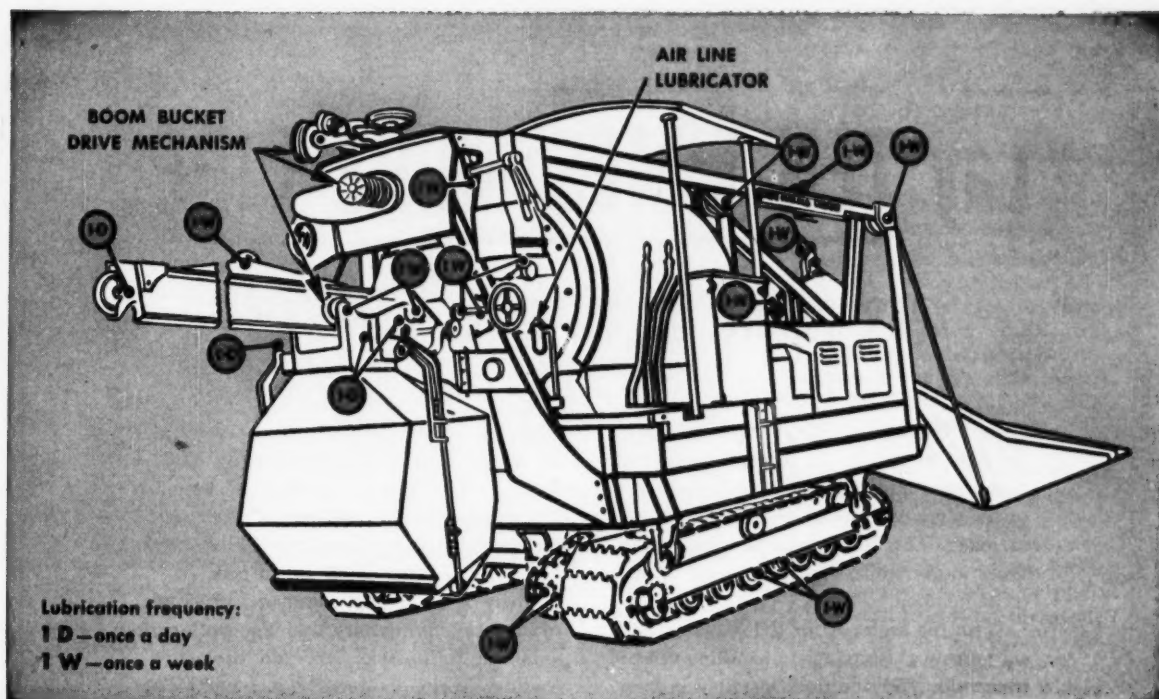
Dual power, for travel and work, gives you the best all-around performance in the truck crane field. You can prove it. Available also with remote control. See your P&H dealer.

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P&H Power Shovels and Truck Cranes are more easily converted for various types of service because hoist and digging drums are on one shaft. The need for auxiliary shafts and gearing is eliminated. Write for literature on the size you need. Sizes up to 8 cu. yds., gasoline, diesel or electric power.

POWER SHOVELS • CRAWLER AND TRUCK CRANES • OVERHEAD CRANES • HOISTS • ARC WELDERS AND ELECTRODES • SOIL STABILIZERS • DIESEL ENGINES • PRE-FABRICATED HOMES



WHERE AND WHEN TO LUBRICATE. Shown above is just one of hundreds of drawings and photos in Cities Service's new EARTH MOVING AND CONSTRUCTION MACHINERY LUBRICATION BOOK. Individual elements of the machine are shown in detail in book.

THERE ARE OVER 20 WEEKLY OR DAILY LUBRICATING POINTS ON CONCRETE MIXER-PAVER

Whether you're the head of a construction outfit, or the operator of a single piece of equipment... knowing when, where and with what to lubricate is unquestionably one of your most important functions.

This information, complete with drawings, photos and lubrication charts, is all contained in Cities Service's EARTH MOVING AND CONSTRUCTION MACHINERY LUBRICATION BOOK.

This 56 page book outlines the safest, most complete lubrication maintenance procedures for just about every piece of machinery you might use. It was produced for you, as a service to you by the Cities Service Company... producers, refiners and marketers of the most complete line of the finest petroleum products. For your copy, write: Cities Service Oil Company, Dept. A39, Sixty Wall Tower, New York City 5.



FREE: Write Cities Service today for the new EARTH MOVING AND CONSTRUCTION MACHINERY LUBRICATION BOOK.

CITIES  SERVICE
QUALITY PETROLEUM PRODUCTS

Lay TEN TIMES MORE PIPE

PER POUND OF MATERIAL HANDLED

Armco Corrugated Metal Pipe is strong, yet light in weight. In contrast, rigid sectional pipe and monolithic box structures of the same capacity weigh about ten times as much. This means you can install ten times more Armco Pipe per pound of material handled.

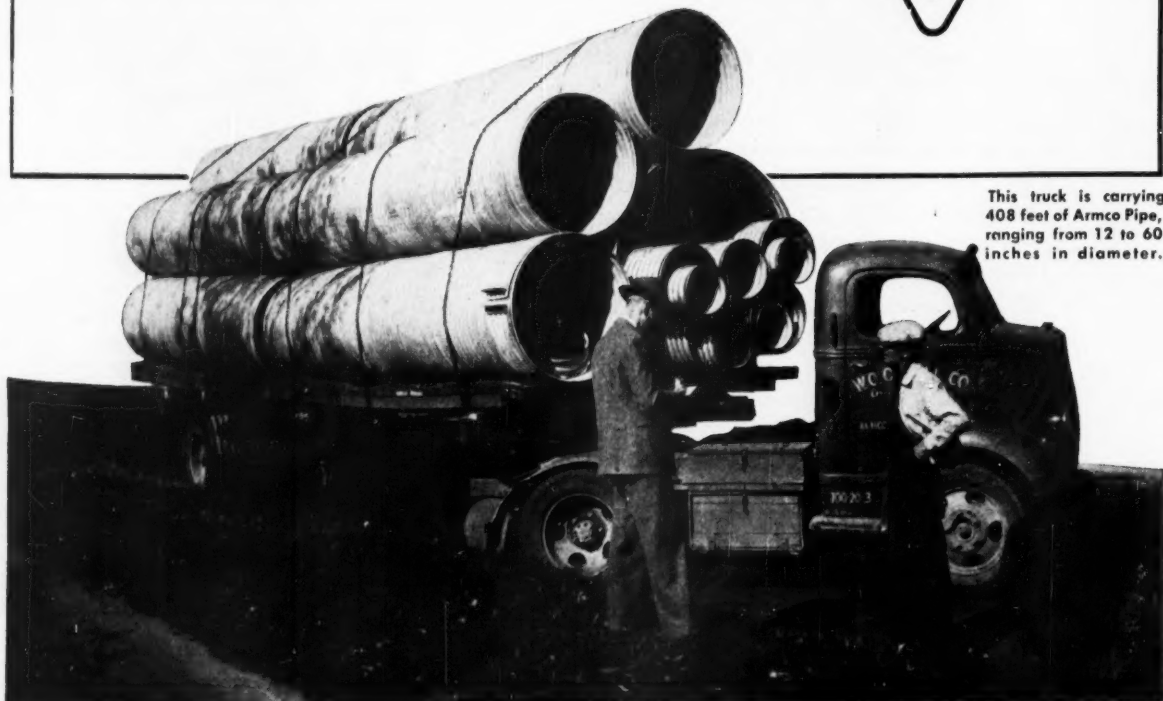
With the high cost of today's labor and equipment, this savings in handling can be tremendous. In addition, installation goes along faster and easier. Jobs are completed ahead of schedule. This means more profit for you.

But let's get specific. Suppose you need a 15-inch diameter culvert, 40 feet long.

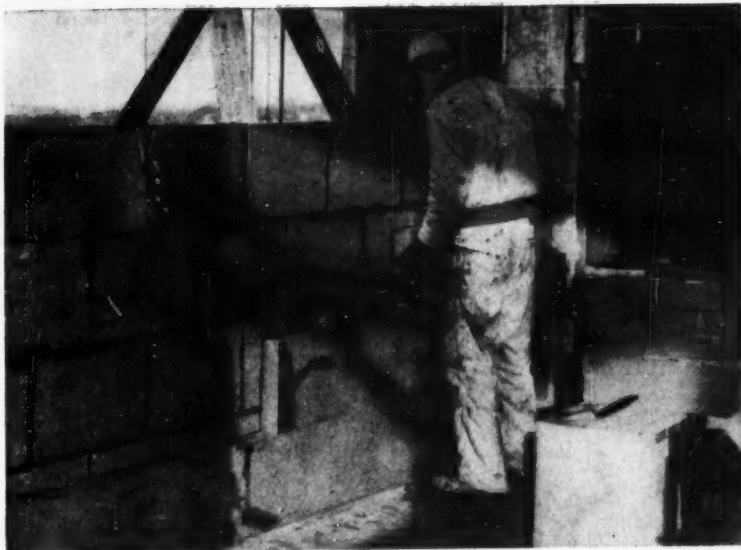
Then you should have two 20-foot lengths of Armco Pipe, plus one coupling band. Each 20-foot length, in 16-gage, weighs 260 pounds. So the total handling weight, including coupling band, would be *only 530 pounds*—an easy, two-man task.

There is an Armco Drainage Structure to answer almost every drainage problem—in the right style, size and protective coating. Write us for recommendations. Armco Drainage & Metal Products, Inc., 4382 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. Export: The Armco International Corporation.

ARMCO DRAINAGE STRUCTURES



This truck is carrying 408 feet of Armco Pipe, ranging from 12 to 60 inches in diameter.



Insulation Takes Lead ...



...Bricks Trail in Brewery Wall

By RUDOLPH H. LANGER, Chief Engineer, Miller Brewing Co.*

INSULATION APPLICATION preceded laying up of the brick wall in a 12-story low-temperature production building for the Miller Brewing Co., in Milwaukee. Production schedules demanded that parts of Stockhouse "I",

under construction, be put into service before the masonry work could be completed — or even started.

This was a novel assignment. Miller Brewing needed an enclosed, well-insulated building to maintain low temperatures long before ordinary construction methods could finish the job. The trick was accomplished by enclosing Stockhouse "I" in free-standing

(Continued on page 86)

* This description of an unusual construction-insulation technique is taken from a paper, "Modern Insulation Techniques in Brewery Construction", presented by the author at the Insulation Conference during the annual ASRE Convention in New Orleans.

COMMENT

from the

BUTLER ENGINEER

—of Dream Jobs and Crepes Suzettes

Combine the pulchritudinous qualities (all right, sex appeal) — of Marilyn Monroe, Lana Turner and Betty Grable and you'd have a gal no more attractive to the eye of this engineer than the sight of a new Butler Plant near Tampa, Fla. The design gave us the chance of a lifetime to exercise virtually all of our painstakingly acquired engineering know-how*. This dream-job is combined ready-mixed plant, block plant, concrete pipe and asphalt plant. And I must say the whole layout is very unique, well-integrated and economical in its simplification of a highly complex overall problem. This is especially true of the aggregate and cement handling systems, each of which feeds the 4 production divisions.

Just one more boast and I'll shut up until next time.

There's another Butler Plant in Great Bend, Kansas that reaches a new high in the de luxe bracket. When I saw it on a final inspection trip I thought a humorous Kansas tornado had picked up a greenhouse intact and slapped it on the side of our job. But no! The owner had the batcher platform entirely glassed-in, complete with dust-tight hardware. And he built the floor of carefully laid hardwood.

Our good friend threatens to put in an oriental rug, exotic tropical plants and a chafing dish for crepes suzettes at tea-time.

We in turn threaten him with subscriptions to Good Housekeeping and Gourmet.

It looks like a swell year.

The Butler Engineer

BUTLER BIN COMPANY
WAUKESHA, WISCONSIN

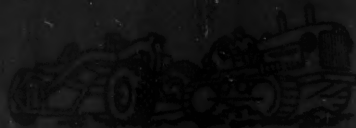
* Engineering know-how is one thing you can give away and still have all of it left. We therefore have plenty for planning your next job.

B.E.

Keep 'em Working in the big year coming up



MOVES MORE PAYDIRT PER DAY! That's International's Big Red TD-24—the most powerful crawler on the market—the crawler that gives you the fastest work cycle.



**Here's help...
where and when you need it...
with your International
Industrial Distributor's ready
service and parts departments**

Your crawler tractors have to pay off with more work done per day, more days worked per year.

That means speed and power. The ability to stay on the job. Minimum downtime.

And it also means fast maintenance service at your call, when and where you need it.

That's your International Industrial Distributor's service—service that includes

TRAINED "DIESEL DOCTORS"—factory-trained specialists in maintenance and overhaul.

PROMPT FIELD SERVICE at your job site to help keep your equipment working, to get it back to work faster, to cut costly downtime on the spot.

COMPLETE SHOP FACILITIES for major work—you're never far from an International Distributor's shop, no matter where your equipment goes.

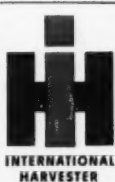
QUICK PARTS SUPPLY from your distributor's fully stocked parts department, backed by International Harvester's network of strategically located parts depots (in size and scope, exclusive in the industry).

Isn't this *complete* service a mighty good reason to get International "Power that Pays" for the hard-working years ahead?

**INTERNATIONAL HARVESTER COMPANY
CHICAGO 1, ILLINOIS**

INTERNATIONAL

POWER THAT PAYS



YOU NAME IT—your International Industrial Distributor has it in his big, efficient parts department. And if he hasn't, he can get it fast from his nearby International Parts Depot.



"HEART SPECIALIST!" A crawler's heart is its sturdy fuel pump. It seldom needs attention. When it does, this "diesel doctor" operates with precision instruments in a special dust-free room.



HERE'S HELP WHEN YOU NEED IT. Skilled, experienced mechanics equipped with the right tools for doing major maintenance fast at your International Distributor's shop.

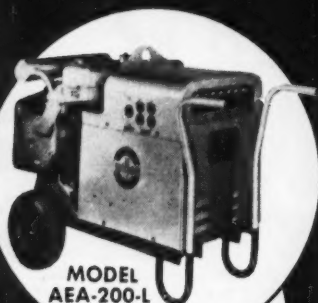


ON THE JOB! Here are an International Distributor's field servicemen, on the job at the job site installing an overhauled transmission. A phone call gets this kind of service.

Now!

TAKE ALL
THE POWER
YOU NEED

Right to the Job!



miller
ENGINE DRIVEN
A.C. ARC WELDER
& POWER PLANT



The only welder of its kind on the market today . . . an arc welder and power plant combined that you can take right to the job with all the power you need

- to weld
- for tools
- for lights
- for all other equipment

For thawing frozen water pipes, too, the MILLER AEA-200 is unequalled.

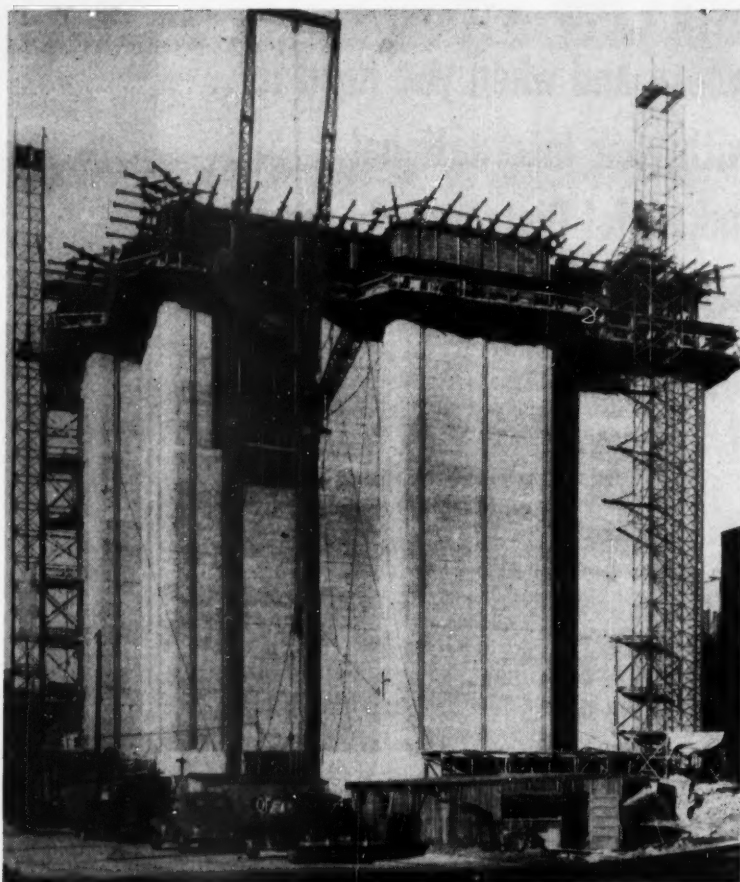
Compact and portable . . . its exclusive features warrant your immediate investigation.

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Complete details upon request, and the name of your nearest MILLER distributor.

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INSULATING WALL LEADS the brickwork on the upper floors of this 12-story, low-temperature brewery stockhouse. Note storage tank installed on floor prior to closure of wall.

walls of Foamglas and letting the brick wall follow to complete the structure.

As soon as the basement, which houses refrigeration equipment, was completed, the "wall" of insulation was started. The insulation contractor, Sprinkman and Sons Construction Co., Ltd., was certain that the compressive strength of Foamglas (about 140 psi) would permit erection of walls of insulation 50 ft in height on the structural steel without laying a single brick.

Since the structural floors were completed, it was possible for the owner to keep one jump ahead of the insulation crew and get the glass-lined storage tanks in place before the wall areas were closed in.

This insulation is self-supporting from basement to roof, without additional supports such as backstays or nailing strips. The wall insulation is tied to the Foamglas-sealed roof, forming a complete envelope of insulation. These self-

supporting walls of Foamglas were exposed to all types of below-zero and summer weather. Even 65-mph winds failed to cause trouble. Inside the building it was possible to maintain a constant temperature of 28 deg F., an important consideration in the brewing process.

This method of construction was a complete reversal of the proposed schedule. The original program called for the Foamglas to be adhered to the brick walls by applying Enamelite on the masonry wall.

Instead, as the brick work followed the free-standing walls of insulation blocks up the building, a 2-ft ribbon of Enamelite was troweled on the Foamglas wall above the brick. The masons then embedded the inside course of brick in the Enamelite to form a good strong bond between the masonry and insulation.

The brick work at one time caught up to the insulation crew on the fourth floor, due to construction delays in the erection of struc-

tural steel. However, when construction was resumed, the insulation crew again moved ahead of the bricklayers.

Quality of work was excellent. A conference concerning the unorthodox construction methods being pursued convinced the engineers that it actually was a more satisfactory procedure than the more conventional system of constructing the wall first.

Advantages discovered were:

1. There is an excellent bond between the brick and the Foamglas, since the brick was pushed into the freshly applied Enamelite ribbon.
2. The brick layers were able to work faster and with greater ease because the insulation established the building lines.
3. The method speeded up construction and permitted floors of the stockhouse to be pressed into service at an earlier date.

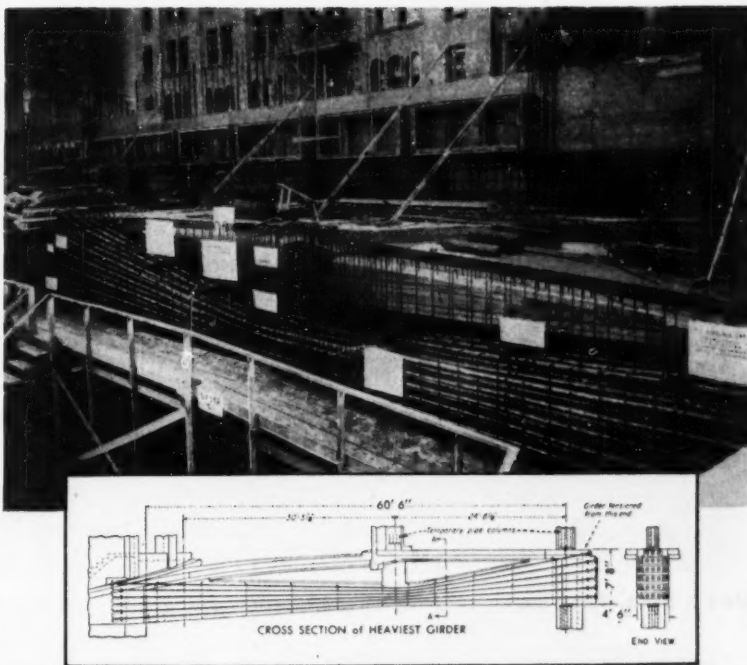
It was decided to continue with the newly established method. Much to everyone's satisfaction, work on the building was continued successfully in this fashion and additional floors were put into production ahead of schedule.

The insulation applied on the job is in handy block form, measuring 18x12x3 in. The material was laid in two courses, with the blocks installed so that no joints overlap.

Following the standard procedure of Miller Brewing Co., the Foamglas was covered on the interior with sheets of 20-gage aluminum to protect it against damage resulting from moving trucks and equipment. Incidentally, the aluminum serves a dual role; it also acts as a reflective surface repelling heat energy. This increases the over-all efficiency of the building, which has a capacity of 260,000 bbl of beer.

Dust Did It

JOHN VIVANT, an ironworker foreman at the Fort Randall Dam project, came close to being dusted off for good. He was injured while climbing a steel column to secure some cables. Accumulated dust made the column slippery and he lost his hold, falling approximately 34 ft to a concrete floor below. He struck some 3/4-in. steel dowels in the concrete, resulting in penetration of the chest, a punctured thigh, multiple bruises and a bone fracture in the right heel.



HEAVIEST PRESTRESSED CONCRETE GIRDERS VIBRATED with TWO RUBBER TIPPED VIBER VIBRATORS

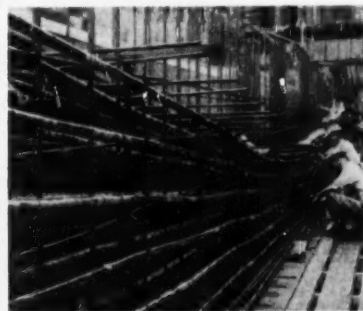
"Rubber tips were essential to avoid any possible damage to protective covering on prestressing cables," says W. H. Ellison, of Ellison and King, consulting engineers on San Francisco garage built by Barrett and Hilp, general contractors.



"PROPER VIBRATION ABSOLUTELY NECESSARY in PRESTRESSED GIRDER CONSTRUCTION,"

says consulting engineer Ellison.

In designing the heaviest prestressed girders used thus far in the U.S. if not in the world, placement of concrete was a very critical problem. With as many as 28 1 1/2" cables, plus normal reinforcing bars, thorough vibration was a must to insure good quality, high strength, uniform concrete throughout the entire section of the heavy girders. During placement of the concrete Viber rubber-tipped vibrators were inserted, then turned on and slowly withdrawn to minimize danger of damage to cables and covering.



RUBBER TIPS PREVENT DAMAGE to CABLE COVERING

To prevent bonding, cables were greased and wrapped with two layers of siselkraft paper. Use of rubber tipped vibrators minimized any possible damage to this covering during vibration of concrete. Such damage could have resulted in bonding with the concrete and interfered with proper tensioning of the cables.

Replaceable rubber tips are an exclusive development of VIBER Company and another example of the aggressive design and planning that has made VIBER a leader.

For further information on VIBER'S complete line of internal and external vibrators, write to your nearest authorized distributor or **VIBER COMPANY**, 726 South Flower Street, Burbank, California. Dept. 68.



Deep bite, fast haul help Euclid Loader get 1,000 yd hourly for . . .

High-Production Grading in Texas

THIRTY-SIX HOURS after receiving a 700,000-cu yd earthmoving contract from the Aluminum Company of America, Dean Skinner, Austin, Tex., contractor had his equipment rolling on the job turning out high-volume production.

The contract called for prepara-

By EDWARD F. LONDON

tion of the site for Alcoa's \$100,-000,000 aluminum smelting plant at Rockdale, 52 mi northeast of Austin.

The job consisted of clearing trees, stripping topsoil and side

grading 216 acres. The deepest cut is 13 ft, and the fill averages 17 ft—to be graded at elevation 479.0 to make a level plateau for building construction.

This site was selected by Alcoa because it is practically on top of
(Continued on page 91)



NO TIME LOST on the fill. Excavated material is spread by a Caterpillar D8 as a Euclid bottom dump follows hard on its heels,

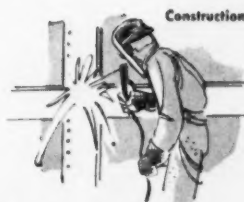
dumping another load. Compaction is obtained by equipment moving across the fill; rollers are not required.

A.O. Smith Field- King

2½ KW Auxiliary
Power



Construction jobs



Pipeline welding



Available in 200 and
300 Amp. models

The gas engine driven welder with the features YOU wanted!

All-electric dual control provides continuous, stepless current adjustment with constant engine speed!

Electric idling control, unlike other types which can easily clog or get out of order, assures perfect adjustment at all times and practically no maintenance!

Auxiliary D. C. power is a full 2½ kilowatts, the largest available in any standard engine-driven machine!

A rugged machine with less bulk! A field welder with 25% extra horse-

power that guarantees smoother, easier welding!

Lighter weight! The Field King 200-Amp. model, for example, weighs only 985 pounds. This is achieved by modern torsional mounting. This lighter weight means greater mobility and lower shipping costs.

Greater fuel capacity! The larger gas tank means a full nine-hour working day without stopping to refuel.

A safer machine! Extra baffle plates on

each side of the gas tank prevent accidental fires caused by unintentionally bumping the electrode against the gas tank.

It's the field welder you've been asking for . . . now available with the A. O. Smith name, guarantee and reputation behind it.

Contact your A. O. Smith dealer for full details, or write:

A. O. Smith Corporation
Welding Products Division
Dept. CM-153, Milwaukee 1, Wis., U.S.A.

Made by welders
... for welders



A.O. Smith

WELDING PRODUCTS

Welding Products Division, P. O. Box 584, Milwaukee 1
International Division, P. O. Box 2023, Milwaukee 1, Wisconsin, U.S.A.



WEAR-ARC hard-facing alloys correct it!

WEAR-ARC WH • Build-up alloy for manganese and high carbon steel parts subjected to severe impact, abrasion, and compression.

WEAR-ARC 12 • Hard-facing alloy for overlays providing exceptional wear resistance under heavy impact and abrasion conditions, and deposits to bond with manganese steel.

ALLOY RODS
COMPANY
YORK, PENNSYLVANIA

NO FINER ELECTRODES MADE... ANYWHERE

Manufacturers of Arcalloy stainless steel electrodes • Bronze-Arc phosphor bronze electrodes • Nickel-Arc and Nickel-Arc 60 electrodes for cast iron • Tool-Arc electrodes for tools and dies • Weld-Arc low hydrogen electrodes. Write for product Bulletins.

Singly or in combination, one or more of the many **Wear-Arc** hard-facing alloy electrodes will handle every known rebuilding and hard-facing problem. Why experiment... why depend on the unknown, the untested? For every application where wear patterns must be corrected to resist impact, abrasion, compression, heat, and corrosion... insist on genuine **Wear-Arc** Electrodes, one of Alloy Rods Company's six famous brands!

Wear-Arc 3 to build up carbon steel... **Wear-Arc 6** for heavy impact, abrasion, and compression... **Wear-Arc 40** and **Wear-Flame 40** for light impact and severe abrasion... **Wear-Arc A** and **Wear-Flame A** cobalt-chromium-tungsten type for light impact, wear resistance, heat, and corrosion... **Wear-Arc B** and **Wear-Flame B** cobalt-chromium-tungsten type for heat, corrosion, and abrasion combined with impact... **Wear-Arc** and **Wear-Flame Tungsten Carbide** the ultimate in abrasion resistance.

AR-14
EDUCATIONAL FILM • Alloy Rods full color and sound motion picture, "No Finer Electrodes Made... Anywhere," 16 mm., available without charge... see how electrodes are made... write Department M.



SIDE-SLOPE DUMPING is taken in stride by Euclid bottom-dump trucks as they dress bank to specifications. Deepest cut was 13 ft, and the fill averaged 17 ft on the 200-acre site.

the world's largest lignite deposit. This material, a brownish-black cousin of soft coal, will fuel the steam-electric generating facilities designed, and to be constructed, by Texas Power & Light Co. for Alcoa, adjacent to the aluminum manufacturing plant.

Skinner began clearing operations with six Caterpillar D-8 crawlers with bulldozers. Practically the entire area was covered with trees which were pushed

down and decked by the D-8's and then burned.

As soon as the Cats had cleared enough working room, the work of stripping 6 in. of top soil from the 200-acre area got under way. A 9BV Euclid Loader, 15-yd Euclid bottom dumps, and Le Tourneau Tournahoppers, five Caterpillar Model 12 motor graders and four Super "C" 15-yd Le Tourneau scrapers began their daily 20-hr grind, stopping only for crew

changes and refueling of machines.

After Skinner's hard-driving crew had cleared and stripped the area in record time, the loader, pulled and pushed by Caterpillar D-8 crawlers, began whittling down the highest point.

With cutting blade set at a depth of 24 in., the loader traveled back and forth in short cuts, the longest measuring about 1,000 ft. Loading the eight-haul units at an average

(Continued on page 94)



SOME EXCAVATING was done by scrapers. Here the Tournapull gets an assist from a Cat D8 as it bites into hardpan. Fairly level and short-haul routes made it possible for a small number of earth-movers to maintain a high volume on two 10-hr shifts.

Mobile CONCRETE MIX PLANT

21-FOOT discharge

KOEHRING 16-E *twinbatch*,

with 6 m.p.h. rubber-tired mobility and high elevating boom, has unlimited application on all types of concrete construction work . . . for buildings, retaining walls, pilings, culverts, bridges, tunnels, widening highways and airport strips, batching into trucks, etc. Bucket rides on 60° elevating boom . . . discharges controlled batch into overhead forms, hoppers or chutes at a dumping height of 21 feet (higher with special boom). Boom also swings in an arc of 160° . . . speeds pouring of floors, foundations. This

heavy-duty 16-E easily mixes and distributes up to 50 cu. yds. per hour. 7-second skip hoist, split-second Autocycle mixing controlled by Koehring Batchmeter, and vertical syphon-type water tank, all assure consistent, maximum-strength concrete at top batching speeds.

Productive work-time is increased because mobile, rubber-tired 16-E works over pavement without planking, makes self-powered moves job-to-job at 6 m.p.h. Get more facts from your Koehring distributor, or write for literature.

KOEHRING CO., Milwaukee 16, Wis.

(Subsidiaries: JOHNSON • PARSONS • KWIK-MIX)



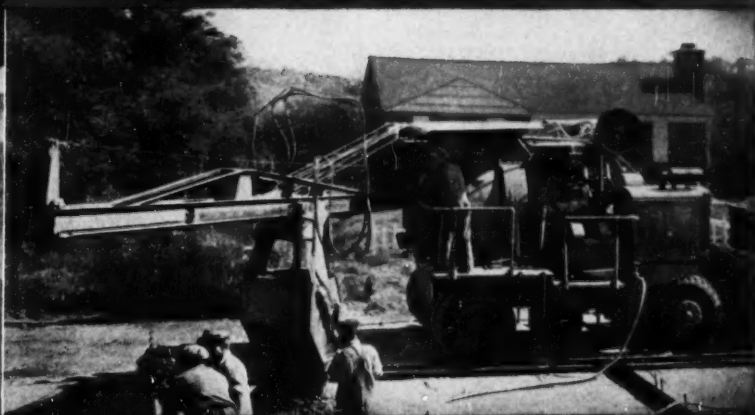
KOEHRING 16-E *twinbatch*®

Height



CONTROLLED-DISCHARGE BUCKET

has clamshell-type door, hydraulically controlled... can be opened or closed at any time for greater discharge control. 24 cu. ft. water-level capacity is more than ample for the full 16 cu. ft. concrete batch.

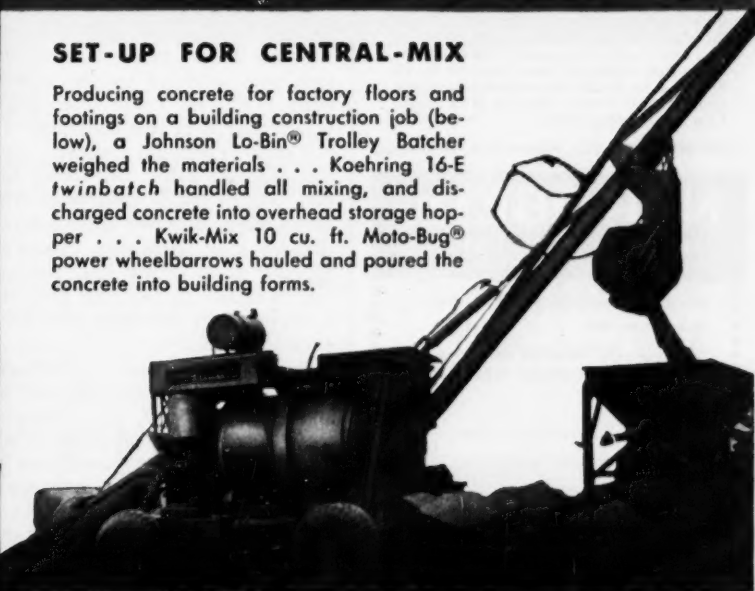


BOOM SWINGS IN 180° ARC...

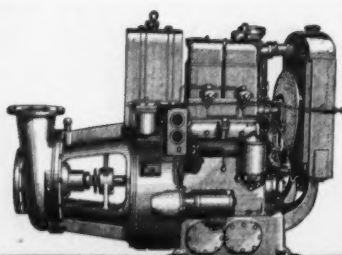
... double-axle distributor boom on the Koehring 16-E twinbatch is power-controlled... arc elevates 60°... is self-locking and holds securely in any position for accurate setting and discharge.

SET-UP FOR CENTRAL-MIX

Producing concrete for factory floors and footings on a building construction job (below), a Johnson Lo-Bin® Trolley Batcher weighed the materials... Koehring 16-E twinbatch handled all mixing, and discharged concrete into overhead storage hopper... Kwik-Mix 10 cu. ft. Moto-Bug® power wheelbarrows hauled and poured the concrete into building forms.

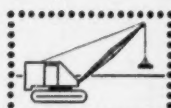


Ask, too, about production advantages of big 34-E twinbatch and longitudinal Finisher for highway, airport, other major paving jobs.



NORDBERG Diesel Units

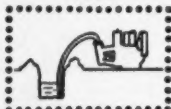
WILL
SAVE
MONEY
ON ALL
THESE
Construction
POWER
JOBS



Electric power for lighting
or for crane magnets.



For re-powering smaller
shovels.



For drainage and other
pumping jobs.



For original or replacement
power in miners.

THESE are just four of the scores of construction powering jobs you can handle better, at lower cost, with Nordberg Diesel Power Units. Built in 1, 2 and 3-cylinder sizes, these compact, heavy-duty units provide from 10 to 45 hp, or 6 to 30 kw for around-the-clock construction service. Get the facts today. Clip the coupon now.

NORDBERG MFG. CO., Milwaukee, Wisconsin

NORDBERG

BUILDERS OF AMERICA'S LARGEST
LINE OF HEAVY DUTY DIESELS

Nordberg Manufacturing Company
Milwaukee, Wis. 4-252-C

Please send literature describing the
full line of Nordberg "AFS" Diesel
Power Units.

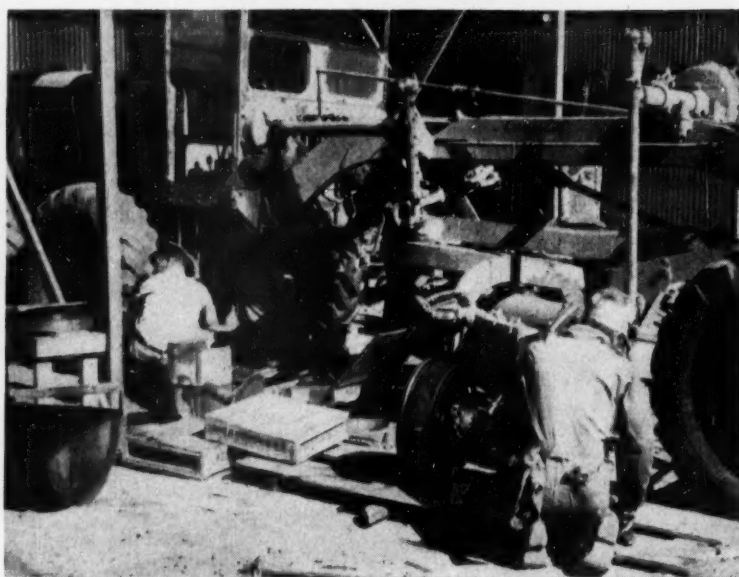
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Company _____

Address _____

City _____ Zone _____ State _____

HIGH-PRODUCTION GRADING . . . Continued from page 91



THREE MECHANICS keep equipment in service. Here they are overhauling the drive unit of a Caterpillar grader in the job shop just off the edge of the fill area. Routine servicing and lubrication were done with a mobile unit on the cut and fill.

rate of 1,000 yd per hr demanded top performance from men and machines. Frequently bottom dumps were filled in 15 sec as they rolled in unison with the loader. To maintain the terrific loading average, hard pan ahead of the loader was loosened with a K-30 Le Tourneau Rooter.

Traveling at top speed, the haul units moved the excavated material, consisting of clay, sand and iron rock, to the fill areas at both ends of the plateau which had to be brought up 17 ft to final grade.

Here the excavated material was leveled by Caterpillar D-8 dozers and the motor graders. Compaction was obtained by the moving equipment; no roller compaction was required in this contract.

Three 1,500-gal water tanks mounted on 2-ton Chevrolet flat-bed trucks, with contractor-built spray bars, kept the dust down in dry weather. However, it was not always dusty. One bad week of wet weather turned the area into a sticky mess, bringing production to a standstill.

In spite of this unfortunate break, by the 21st day Skinner had moved 432,343 yd, an average of 20,112 yd per 20-hr day. Under favorable working conditions the dirt was flying at an average of 26,000 yd for two 10-hr shifts.

At night the area was lighted by three Lincoln Electric generator flood lights mounted on towers. An-

other lighting unit was carried on the Euclid Loader.

A repair shop with three mechanics kept equipment in shape. A ¾-yd, Model 41, Lorain dragline did the heavy lifting around the shop.

A job-built grease rig, mounted on a 2-ton Chevrolet flat-bed truck, containing Alemite greasing equipment, serviced rolling equipment on the cut and fill.

The job was started so quickly that Dean Skinner completed a large part of it without knowing how much he was going to get for it. But he didn't seem worried about this, as he watched his crew and machines piling up record yardage on a well-organized job.

Little Leaks: Big Losses

So many uses have been found for compressed air tools that pneumatic power enters into almost every construction operation. It is not unusual for work to be some distance from the compressor, requiring long hose, pipe lines and joints—all susceptible to leaks.

Tests show that when pressure at a pneumatic tool drops from 90 psi to 70 psi, production output from that tool may drop as much as 35%. Enough said. Appoint a watchdog for compressed air leaks.



close to the job
SCHRAMM
Pneumatractor
 speeds construction
 cuts costs!

... And, gets there under its own power!

To paraphrase the contractor on this tough job, Jim Wilson, Bridge Superintendent, Winston Bros. Company, Hollywood, California: "Each day we are finding more and more uses for our Schramm *Pneumatractor*."

The Schramm *Pneumatractor* is a

self-propelled, 105 c.f.m. compressor-tractor that not only provides savings by providing air for a complete assortment of construction tools, but will also PUSH... PULL... POWER... anything a wheel tractor will!

The versatile Schramm *Pneumatractor* offers many other advantages.

Write us for Bulletin Z50A showing number of tools that can be operated by the *Pneumatractor* and by the various size Schramm Air Compressors.

SCHRAMM, INC.

The Compressor People

WEST CHESTER • PENNSYLVANIA

SCHRAMM AIR COMPRESSORS

A SIZE AND MODEL
 FOR EVERY AIR NEED

20-35



60



105



210



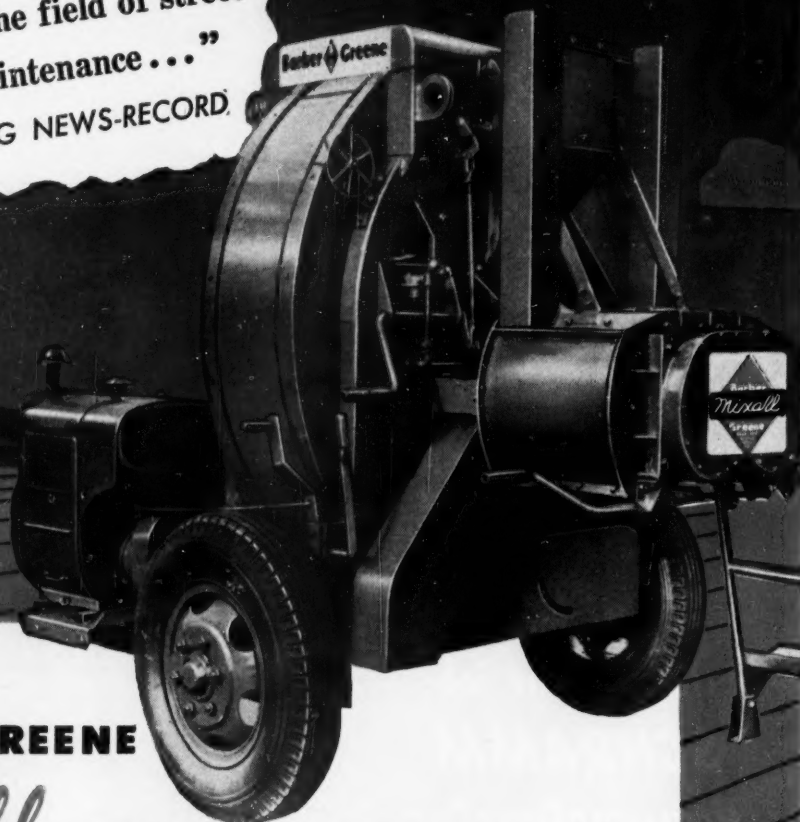
315



600



**"Undoubtedly the most significant
development in the field of street
and highway maintenance..."**
—ENGINEERING NEWS-RECORD



THE NEW BARBER-GREENE

Mixall **MEETS THE NEED FOR ALL MAINTENANCE AND SMALL PAVING JOBS**

The quotation at the top of this page is typical of impartial observers who have seen the new Barber-Greene MIXALL perform. There is widespread agreement among editors, road builders and government officials that the need for a machine capable of on-the-spot production of even the highest type hot mixes has been answered by the development of the MIXALL.

Primarily designed for "stitch in time"

maintenance to prevent major break-ups of much needed roads, the MIXALL also opens the market for surfacing of sidewalks, driveways, parking lots, service stations, playgrounds and countless others.

Once you see the MIXALL perform, you'll quickly recognize the business-building possibilities it holds for you. See your Barber-Greene Distributor for the full story—or write for information.

Barber-Greene

Aurora, Illinois, U. S. A.



MARION Rock bodies stand up Under a shovel!



It takes a tough body to stand daily shovel loading. That's why more operators are putting Marion's into service. On-the-job experience has shown that Marion bodies are built to withstand the severe beating and hard knocks of heavy off-the-road haulage service.

Marion engineers have combined the finest materials available with modern advanced design...to produce the most efficient, trouble-

free heavy dumping units on the market. And Marion's built-in durability means consistent performance... longer life, and lower upkeep.

A Marion body and hoist makes a good truck — better! Your nearby Marion Distributor can give you all the facts—or write direct today.

"Designed on the Job"



MARION

BODIES AND HOISTS

MARION METAL PRODUCTS CO.
Marion, Ohio, U. S. A.

A complete line of standard and special Hydraulic Hoists and Dump Bodies for heavy-duty service

ANOTHER **GW** PRODUCT



Gar Wood

TRACTOR-DRAWN SCRAPERS

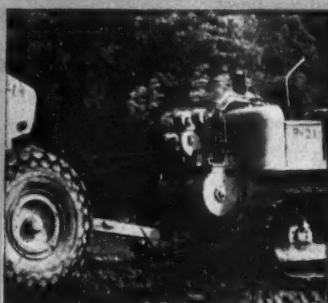
Handle Any Earthmoving Job...

Here's Why...

Gar Wood gives you a complete line of tractor-drawn four-wheel scrapers. Each one is built to "take the works" in the toughest going — give faster digging, faster dumping and greater accuracy . . . **WIDE CUTTING EDGES** let you use power where it counts — moves material back in pan easier . . . **LIVE BOILING ACTION** gives full heaping load every trip at less cost per yard . . . **FORCED EJECTION** and large apron opening gives faster dumping and controlled spreading — so accurate that you can often finegrade! . . . **CENTER LINE SHEAVES** mean far longer cable life . . . Optional tire sizes available to meet all flotation requirements on any job.

GAR WOOD CABLE CONTROLS

Model 281, double-drum unit, gives maximum scraper accuracy. Planetary gearing makes cable drum more sensitive to smallest variations in control levers. Easy to operate, adjust, service and maintain.



GAR WOOD INDUSTRIES, INC.
Findley Division • Executive Offices • Wayne, Michigan



Construction Heroes

By HENRY F. UNGER

THERE WAS NO TIME for deliberation. The rushing water was widening the crack in a tunnel roof at June Lake, Calif. Sharp, ear-splitting sounds indicated that the tunnel timbers were cracking. Quickly, Paul M. Ruelas, working on the exterior of the tunnel, realized that at least a dozen workers would be trapped like rats in the tunnel when it collapsed as they were unable to hear the warning sounds above the noise of the machinery.

His heart pounding with the excitement, Ruelas ran swiftly into the littered area, the crackling of the timbers sounding ominously. Waving his arms he rushed toward the men, shouting to them above the loud noises in the tunnel—and pointing toward the weakening timbers.

Instantly, the men understood. Dropping their tools and equipment, the entire group ran from the area and as they ran, the roof seemed to sag. Debris piled up. Desperately, they pushed through mounds of dirt and rushed for the tunnel entrance. Two minutes after the last man had safely left the tunnel, the entire roof collapsed, wrecking the ventilation and drainage pipes.

By his quick thinking and heroic action at the risk of his life, Paul M. Ruelas, construction worker, saved the lives of eleven men. His deed brought him the famed Carnegie Hero medal and \$1,000.

Ruelas' name and deed took their places with those of scores
(Continued on page 101)



Workman using $\frac{1}{4}$ " drill to repair a tractor.

When you've got drilling jobs that are tough . . . and you want drills that'll put out and stand the gaff . . . it's time to switch to Black & Decker POWER!

Black & Decker Drills are husky . . . yet they're lightweight and well balanced. They're powered by specially built B&D universal motors. Parts are heavy-duty, built to last. And you have your choice of a raft of models . . . in capacities $\frac{1}{4}$ " to $1\frac{1}{4}$ " in steel, double that in hardwood . . . for all kinds of project drilling and boring or equipment maintenance.

See your nearby Black & Decker Distributor for a demonstration. Write for complete catalog to: THE BLACK & DECKER MFG. Co., 630 Pennsylvania Ave., Towson 4, Maryland.

LEADING DISTRIBUTORS EVERYWHERE SELL



SANDERS



PORTABLE GRINDERS



HAMMERS



Black & Decker
PORTABLE ELECTRIC TOOLS

Presenting the New Cleaver-Brooks High-Temperature Oil Booster

"THE SENSATION OF THE EQUIPMENT SHOWS"



Heats faster, at lower cost



Heats to higher temperatures



**Uses high temperature oil as
the heat transfer medium**



Engineered for long life — Strong and rugged

**...for fast, low-cost
heating of oils, bituminous
and heavy viscous materials
in tank-cars and
storage tanks**



DESIGNED AND DEVELOPED BY

Cleaver-Brooks

Builders of Equipment for the Generation and Utilization
of Heat — Pioneers and Originators of Self-Contained Boilers,
Tank-Car Heaters and Bituminous Boosters

USING a specially selected, high temperature oil as the heat transfer medium (no water or steam needed and operating at atmospheric pressure) the new Cleaver-Brooks High Temperature Oil Booster provides many time and money-saving advantages: — high-speed performance — no water, steam, or pressure problems — heats to higher temperatures — positive heat circulation — constant re-use of high-temperature oil medium — quicker shut-down and simpler operation — avoids weather problems — operates at lower costs and with reduced maintenance.

The High Temperature Oil Booster is a fully automatic, rugged, heavy duty heating unit, operating on the principle of a closed heating system. Unit is fired by pressure atomizing type oil burner. Self-contained — including pump, valves, piping, temperature and low level controls, electric motors and controls; complete unit mounted on a heavy channel iron base, ready for service hook-up. Available in two sizes of stationary electric-driven units — write for bulletin and complete information. CLEAVER-BROOKS COMPANY, Dept. A-398 E. Keefe Avenue, Milwaukee 12, Wisconsin.



REVERSE SIDE OF MEDAL

of other construction heroes on the renowned honor roll of the Carnegie Hero Fund Commission in Pittsburgh. Inscribed there are the "heroes of civilization" who have battled wild animals, electricity, floods, poison gas and other obstacles to save their fellow men.

To qualify for hero medals, the candidates must have performed actions out of ordinary line of duty. Policemen, firemen and life-guards, for instance, would not be eligible. The hero must have a full knowledge of the danger involved and must not expect any material benefits to result from his action.

Body Deflection

William H. Lairson, laborer, wasn't thinking of personal glory as he worked on a construction job at Shawnee, Okla. Suddenly a noise above on the 49-ft high framework made him glance upward. A man had slipped and was plunging down toward him.

Quickly, Lairson took one step forward. He spread his legs to brace himself. His muscles stiffened. For a moment, he felt numb as he met the smashing blow of the falling man against his chest and shoulders. His arms vainly swung in an arch, attempting to save the man from a longer fall. The weight was too heavy, but the body was deflected, falling on top of an 18-in. square bucket that was in a sump with the top at ground level.

Lairson was knocked backwards and fell to the ground. Pains shot through his ankle and shoulders. Quickly he rose and staggered toward the victim shouting for help. Aid came immediately. Victim of the fall, John J. Roach, suffered fractures of the left arm, left hip and right leg, but recovered. Lairson wrenched his ankle and re-



Trouble-Free PERFORMANCE

"It's the only machine we've had for any length of time that has had no major repairs." That's what William Wylie, equipment foreman, says about the MICHIGAN ½ yd. Crawler Excavator owned by A. G. Woods Company, Windsor, Connecticut. Yes . . . it's quite a record for an excavator that has been "worked hard," 10 to 14 hours a day for a year and a half.



At Woody Crest Housing Development in West Hartford, Connecticut, the MICHIGAN digs service, sewer, water and drainage ditches . . . excavates for septic tanks and basements . . . loads trucks. Digging 450 feet of trench and laying the eight inch pipe is an average day's work.

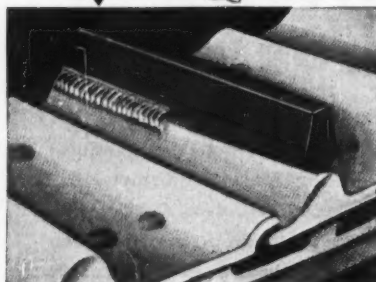
Service records like this are typical for MICHIGAN Excavator-Cranes. Why settle for less? When you need an excavator-crane . . . investigate MICHIGAN . . . you'll agree it's your best buy! Write, wire or phone for complete details.

MICHIGAN POWER SHOVEL COMPANY

495 Second Street, Benton Harbor, Michigan, U. S. A.

restore gripping power

to worn-down
grousers!



Weld Marquette Tractor Strip to your worn grousers to restore pulling power, reduce wear on the track, haul more pay loads per day. Marquette Tractor Strip is made of special wear-resistant steel . . . pre-formed for easy, efficient welding to the grouser edge. Available in random-length bars of 10 to 14 feet, or cut to your specifications. For complete information, ask your jobber . . . or write to Marquette Manufacturing Co., 307 E. Hennepin Avenue, Minneapolis 14, Minnesota.



MARQUETTE
REGISTERED U.S. PAT. OFFICE

Tractor Strip

MARQUETTE MANUFACTURING CO.

307 E. Hennepin Avenue, Minneapolis 14, Minn.

HEROES . . . Continued

ceived contusions of the face, shoulder and chest.

The Carnegie Hero Fund Commission didn't forget Lairson's gallant efforts. He won the coveted bronze medal and \$1,000.

To be certain that no fakes appear on the Carnegie honor roll, agents of the Commission re-enact as closely as possible the heroic acts. Although about 3,800 medals have been awarded, more than 60,000 applications have been denied. Not all medal winners receive cash awards, this grant depending on the financial status of the hero. The money received must be spent for a laudable purpose, such as the purchase of a home, opening of a business or some other such practical end.

Trial by Fire

Edward Hicks, a laborer in Dublin, Ind., tried desperately to save another worker, Auburn A. Money, from burning, but failed.

At work one day, Hicks was startled when an explosion of crude oil vapor shot its flames 160 ft to a storage tank from which sludge was being removed, causing it, in turn, to explode.

Hicks, caught within the fire area, ran frantically to escape the inferno, beating violently at his burning clothes. Although his body was a mass of burns, he suddenly thought of Money trapped in the center of the fire. Shielding his face with one arm, he stumbled into the flames. For 25 ft, he plunged ahead. In the brilliant glow he saw the victim lying on the ground. Unmindful of his own pains, he grasped Money and dragged him from the fire area, where he collapsed. Money died from his severe burns, while Hicks, seriously burned, was disabled for 19 weeks.

For his heroic efforts, Edward Hicks was awarded the Carnegie Bronze medal and \$500, and another construction hero was added to the famed honor roll.

Driving himself until exhausted, Thomas R. Tramontin saved Edward L. Krainik from a cave-in of an excavation at Chisholm, Minn., winning a bronze medal and \$500 for himself and a longer life for Krainik.

The excavation was 24 ft deep, 18 ft long and 3 ft wide. One wall was of thick concrete; the other of rain-soaked clay and sand reinforced by shoring.

Krainik, standing on a weak-

ened plank of the shoring, suddenly catapulted to the bottom of the excavation as it gave way. This loosened the remaining planks and the dirt wall was exposed between the points 8 and 15 ft above the bottom and for a width of 8 ft. A part of the wall collapsed.

The dirt poured down on the helpless Krainik who was buried in an upright position in 7 ft of the debris. Alerted by the collapse, workmen at one end of the excavation, ran to the trapped man and tried to remove the earth.

Tramontin, by way of an end excavation, slowly made his way to Krainik. Vigorously he began to shovel away the dirt with the assistance of another. As soon as the victim's head was exposed, Tramontin's helper hurried away. More earth began to fall. Heedless of his own danger, Tramontin continued to shovel away the earth. Sweat ran in rivulets down his body as he attempted desperately to win the race against the heaving dirt wall.

Finally workmen succeeded in holding boards against the exposed wall and checked the falling earth. Hero Tramontin shouted for three helpers. Only one responded—for 3 min. For 45 min, Tramontin shoveled until he freed Krainik.

Electric Hazard

With complete disregard for his own safety, foreman Arthur W. McKinney succeeded in saving from electrocution Fred H. Maxwell, a timekeeper, who climbed upon a steel structure in Emory, Ga., on which were wires and switches, carrying 19,000 v of electricity. Unaware of his danger, Maxwell stepped over a switch 16 ft above the ground. The shock caused a grounding of the current. Conscious, but unable to speak or shift his body, Maxwell lay on a horizontal cross-bar, just 6 in. wide with his leg on a switch.

McKinney knew that the current would soon be returned to the switch by a distant substation. Excited, he climbed the ladder to the top of a large transformer near the structure, and sprang up on a beam close to Maxwell. Then he grabbed Maxwell's leg, and pulled it away from the switch.

Others seeing the accident helped McKinney remove Maxwell to the ground. Shortly afterward, the current was returned to the switch. Quick thinking and defiance of death brought McKinney a bronze medal and \$1,000.

**CONTROLLED
IMPACT
ACTION**

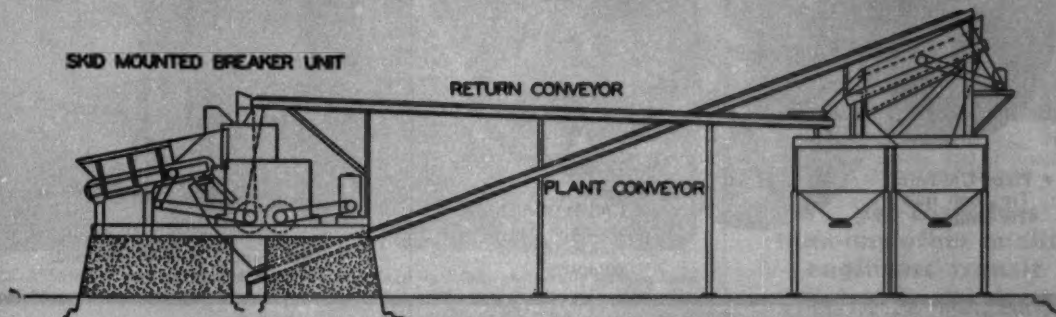
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With the PMCO Impact Master's high ratio of reduction, the complete crushing job is done in one fast controlled breaking operation. The breaking is accomplished by rigidly mounted rotor hammers, producing a top quality, uniform gradation cubical aggregate. Finished product size is easily controlled, and simple mechanical adjustments change the percentage of sizes. You can use the PMCO Impact Master for producing road building and concrete aggregates, and adjust it for the simultaneous production of aglime when desired.

PMCO Impact Masters have capacities up to 500 tons per hour. Let us give you profit-making details on the size that meets your requirements. Write today.

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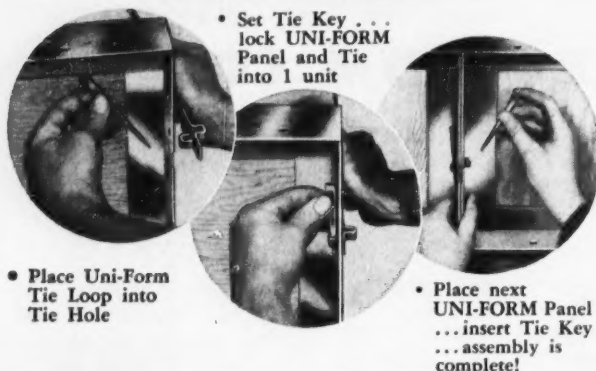
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UNI-FORM Panels *SAVE TIME...* *CUT LABOR AND MATERIAL COST*

SIMPLE ASSEMBLY

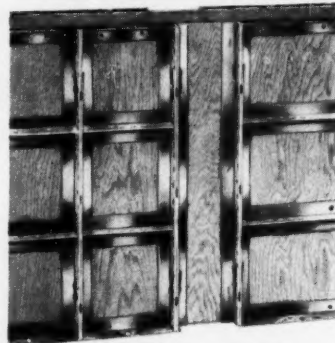


• Place Uni-Form Tie Loop into Tie Hole

• Set Tie Key . . . lock UNI-FORM Panel and Tie into 1 unit

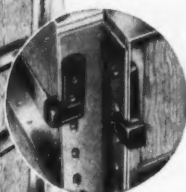
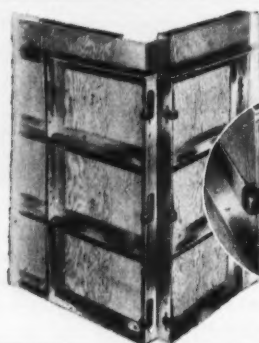
• Place next UNI-FORM Panel . . . insert Tie Key . . . assembly is complete!

EASY FORM CLOSURE



Close forms with 2 Uni-Form Angles and a piece of plywood . . . Start stripping here

FAST CORNER FORMING

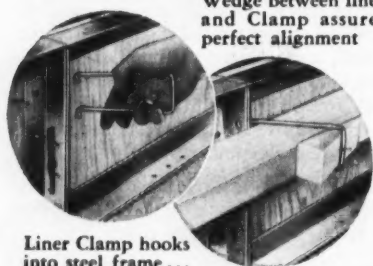


An Outside Corner Angle and Panel Loc Clamps form tight, accurate vertical corner . . . no additional tying.



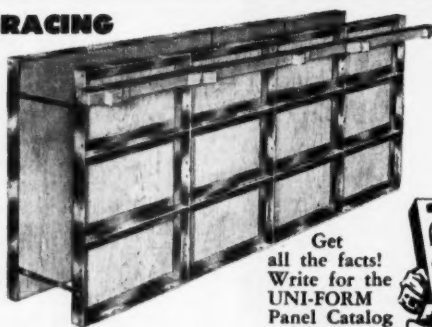
Rigid Steel Corner forms provide quick...easy...accurate inside corners.

ONE SIDE ALIGNMENT AND BRACING



Wedge between liner and Clamp assures perfect alignment

Liner Clamp hooks into steel frame . . .



Alignment and bracing on 1 SIDE ONLY
Saves Time . . .
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Get all the facts! Write for the UNI-FORM Panel Catalog today. No obligation.



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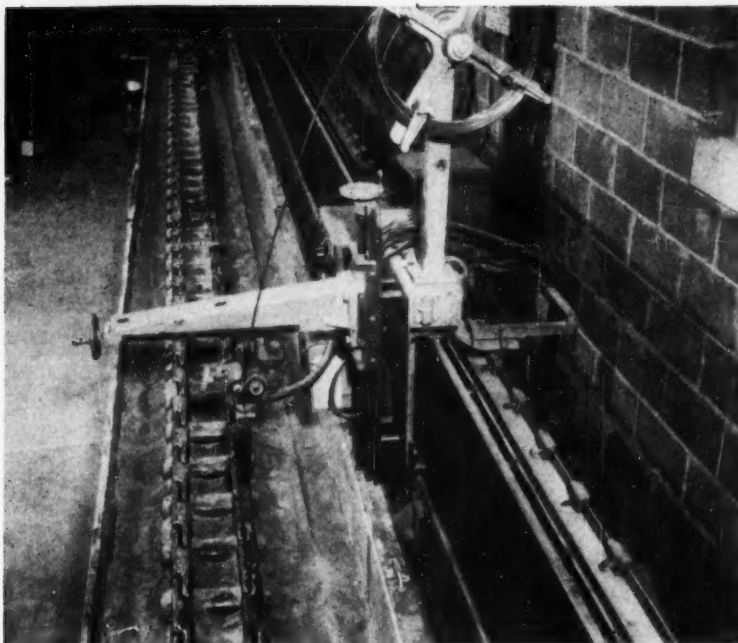
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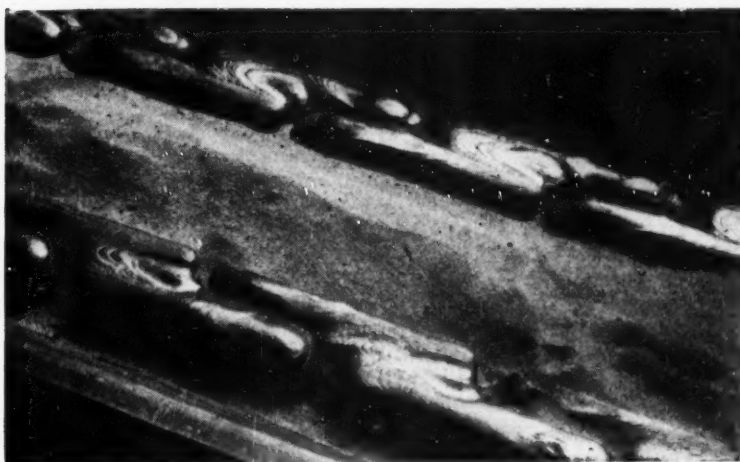
You Build... Coast to Coast





TRACK ASSEMBLY gets weld metal deposit to resurface worn links. Automatic welding head is carried on electronically controlled carriage moving parallel to track surrounded by flux.

Automatic Welding...



A DEPOSIT about $\frac{1}{8}$ in. thick is laid down on each pass, and generally three passes are required. Set of large tracks takes 27 hr, uses 175 lb of welding wire, 200-lb flux.

... Builds Up Track Links

A CM&E Maintenance Feature

AUTOMATIC WELDING has come into the construction equipment repair field in a big way. Teaming up of rotating positioners and the submerged arc-welding process, specifically for the resurfacing of round work, has made it possible

for scores of dealers to set up such a valuable service to busy contractors.

Because of the speed with which overlays may be applied by the automatic submerged arc process, considerable effort has also gone

**This precision transit
gives years of precision work**



Model No. 7014 with "A" standard. "U" type also available. \$575.00* complete with tripod, case and field equipment.

**... yet costs less
than any other quality
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You can pay more, but you can't buy a finer instrument than the White Engineers' Transit. Typical of the added manufacturing refinements that assure you of more years of super-precision are White's graduations:

A new Swiss dividing engine of the latest design guarantees original tolerances of less than one second. And cutting them into solid silver preserves this accuracy longer.

In addition, White's unexcelled coated optics provide a clear, sharp image — without halation even under adverse conditions at long distances. Consider, too, the totally enclosed leveling screws, waterproof compass box, hand-fitted, anti-friction, virgin hard bell metal centers.

See your dealer for full information on the complete David White line of Transits, Universal Level-Transits, Levels, Theodolites and engineering supplies. Or write for new Bulletin 1052. DAVID WHITE COMPANY, 343 W. Court St., Milwaukee 12, Wis. 7219



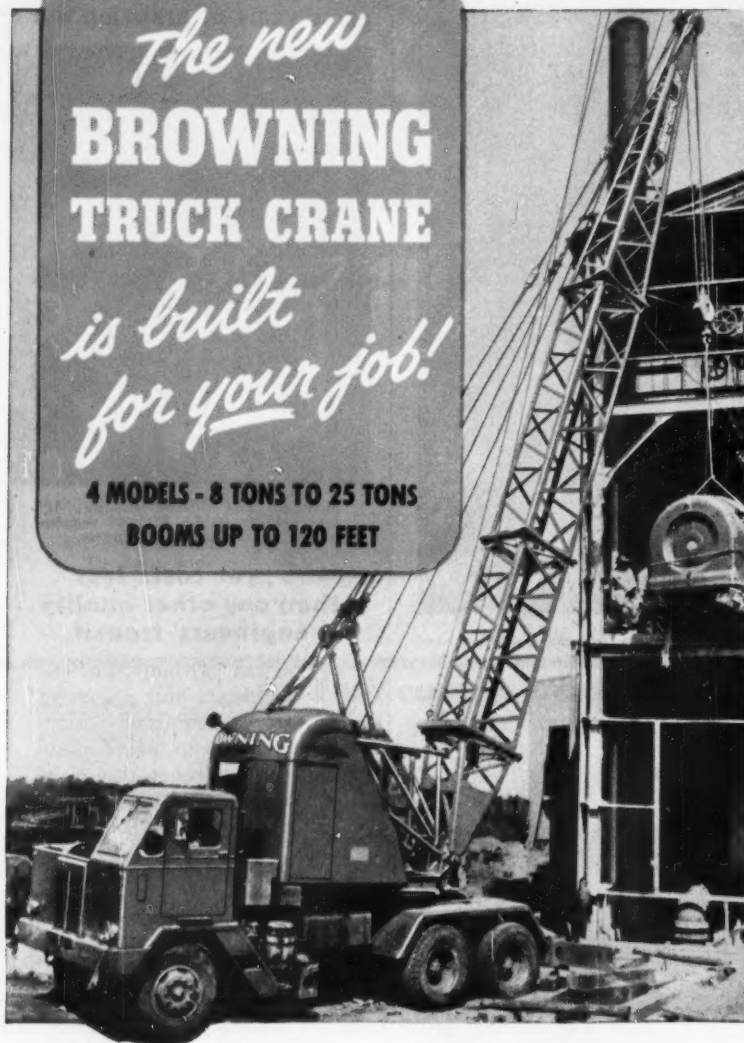
We offer the most expert REPAIR SERVICE on all makes, all types of instruments.

*Price subject to change without notice.

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**4 MODELS - 8 TONS TO 25 TONS
BOOMS UP TO 120 FEET**



BROWNING Truck Cranes give you independent control of hoisting and lowering, boom radius, rotating, traveling and steering—*separately or simultaneously*. This exclusive Browning feature speeds up operation and makes your crane more productive on any kind of job—straight crane, clamshell, dragline, backhoe, shovel, magnet or piledriver.

And your Browning will *stay on the job*. Maintenance is simple and easy, reducing down time to a minimum. The well-known ruggedness of Browning design keeps these cranes working for years.

Browning's 53 years of crane-building experience and business integrity assure you a sound crane investment. Write for complete specifications of the model built for *your job*.

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**THE BROWNING CRANE
AND SHOVEL CO.**

163rd and Waterloo Road,
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AUTOMATIC WELDING . . . Continued



RATE OF WEAR is about same as for a new track. This built-up surface shows $\frac{1}{4}$ in. of wear after 3,050 hr of bulldozer service.

toward adapting the method for resurfacing of crawler tractor track links.

Early experimental work in Unionmelt welding carried out by The Linde Air Products Company indicated the idea to be entirely practical, provided an inexpensive method of positioning the track links and spacing welds could be devised.

One requirement laid down was that the machine be able to receive a complete track assembly just as it comes off the tractor — to cut handling and labor costs to a bare minimum. In addition, welds were to be smooth and uniform, and the track structure was not to be damaged or distorted by heat.

The Penn Tool and Machine Co., an affiliate of the Berkeley Equipment Co., Danville, Ill., worked out methods to satisfy the basic requirements in a fully automatic machine, the Berkeley "Conserv-all." Basically, the machine consists of a long sheet metal trough rigidly supported on legs.

The entire track assembly is placed inside, with the rail surfaces up. A clamping plate moves against the assembly keeping the links in a straight line. Several hundred pounds of welding flux are used to cover the track assembly, and copper chill bars are laid along each side of the links. At the rear and on a special track supported on rigid brackets, an electronically controlled carriage moves exactly parallel to the positioned links, carrying the automatic welding head and associated equipment.

(Continued on page 108)

Homoflex Hose—More use per dollar

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Homoe er dollar

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FLEXIBLE, LIGHT, BUT RUGGED AND STRONG . . . Yes, you save money because Homoflex lasts longer. It's easier to coil and uncoil . . . no pre-set twist . . . no kinking . . . easier to carry and drag. "Flexible as a Rope". Workmen like it. Cover and tube are inseparable and hosewall is strong and safe, for handling air, water, other fluids and gases. Ask the R/M distributor for Bulletin 6879. He'll tell you about other R/M hose types for steam, oil, suction, chemicals—from small 1/4" size, to huge dredging hose big enough for a man to crawl through . . . also how you get **MORE USE PER DOLLAR** with R/M transmission, and conveyor belt, and V-belts.



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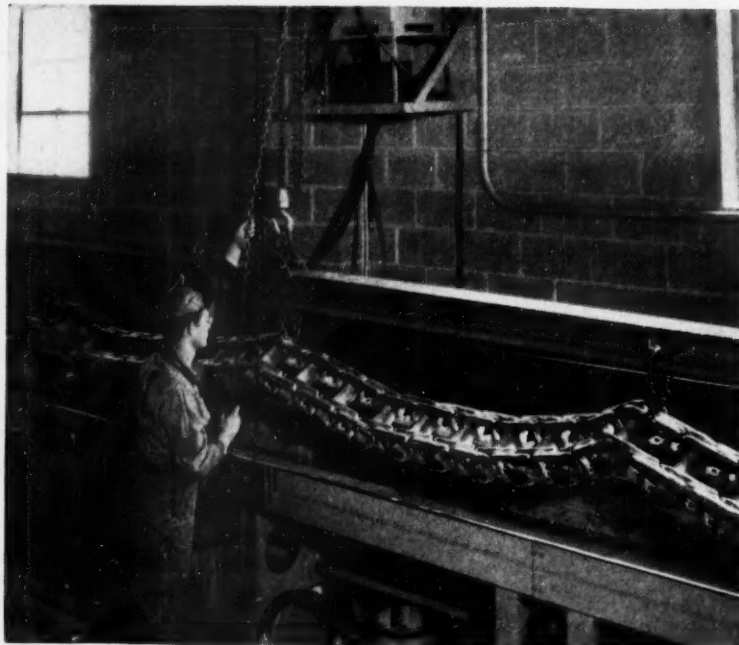
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can be — and have been
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SPREADER BAR lifts track assembly being hoisted out of trough by overhead monorail system. Resurfacing of links without disassembly holds downtime to a minimum.

Control cams are positioned at a distance equal to the track link spacing along a bar at the rear of the machine and make or break the welding wire feed circuit as the welding head moves over the work. Weld lengths are governed by the spacing between cams. Dwell time is controlled by the effective width of the cams and is variable for different model tracks. Two welds are laid parallel on each link, then a center pass completes the overlay.

The welding wire most commonly used is Linde's Oxxweld 1928 (a modified SAE 6150 Steel), and the flux is Unionmelt Grade 85 or 90. With the slow cooling provided by the flux surrounding the links, a surface overlay consisting of at least two layers will have an initial hardness of Rockwell C-30 to C-34. After operation the overlay hardens to about C-36 to C-38. However, the hardness values so determined are not indicative of wear resistance. For some reason, not yet explained, the material outwears deposits of much greater test hardness.

Of particular interest is the quality and uniformity of weld produced by this machine. Extremely worn links have been successfully resurfaced with no evidence of spalling or chipping.

One of the early installations of the Berkeley Conservall automatic

welding setup was made in the shops of the Peoria Tractor & Equipment Co., Peoria, Ill. This dealer has accumulated some interesting data on the buildup of Caterpillar D8 tracks.

A deposit approximately ⅛ in. thick is laid down on each pass. Generally three passes are required to build up worn track links, although Peoria has had tracks come in worn so badly that four passes were required to attain sufficient buildup on a track rail.

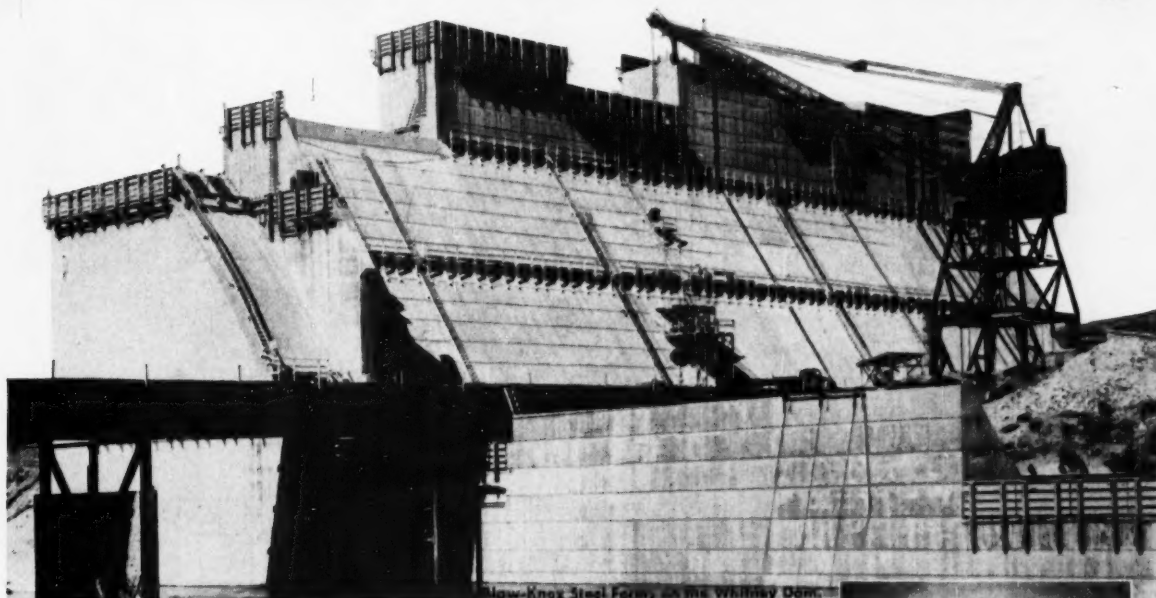
Buff for Contact

Welding speed is 12 in. per min.; alternating current at 600 amp is applied, and the wire is Linde's Oxxweld 1928, 5/32 in. in dia. The only preparation of the parts is buffing of rust with a wire brush to obtain a good electrical contact.

One pass is completed in 45 min. A set of D8 tracks requires about 27 hr for a three-pass buildup which means that the tracks will be in the shop about 40 hr. Such an operation requires 175 lb of welding wire and 200 lb of flux.

It is believed that the time required could be cut back, provided the operator has a good source of current. At Peoria the welding head is being operated at 650 amps and 32 v. It is possible that travel speed could be increased by using a higher amperage.

Is Your Concreting Job Large — Small — Unusual — Complex ?



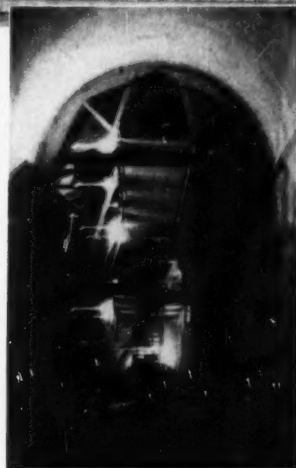
BLAW-KNOX STEEL FORMS

plus BLAW-KNOX CONSULTATION SERVICE
will save you money!

WHATEVER your concreting problems—dams, tunnels, bridges or concrete installations of any kind—take advantage of Blaw-Knox Consultation Service for *preliminary planning*. It will save you time and money, as it has on so many jobs all over the world.

Blaw-Knox engineers, backed by over 40 years' experience in solving tough and unusual concreting problems, are trained to simplify forming methods. They get to the heart of your problem *before the final plans are drawn*—then recommend the exactly right forms for the job, and suggest simplified operating procedures that cut costs by eliminating unnecessary operations.

On your next engineered construction job, consult Blaw-Knox *first*, for recommendations and estimates before submitting your bids. There's no obligation for the expert Blaw-Knox Consultation Service that assures faster, less expensive concrete placing. Write, wire or phone for information.



SPECIAL TRAVELING STEEL FORMS were used to speed a tough tunnelling problem in treacherous rock. In a 7200-ft. railroad relocation bore, a reinforced concrete lining was placed at a rate of 150-ft. a week. It required only 6 to 8 hours to move the retractable steel forms. This is a typical example of Blaw-Knox forms designed to meet unusual conditions.

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Get complete details about Blaw-Knox Steel Forms and the consultation service that is available to any contractor without obligation.



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FORMS**

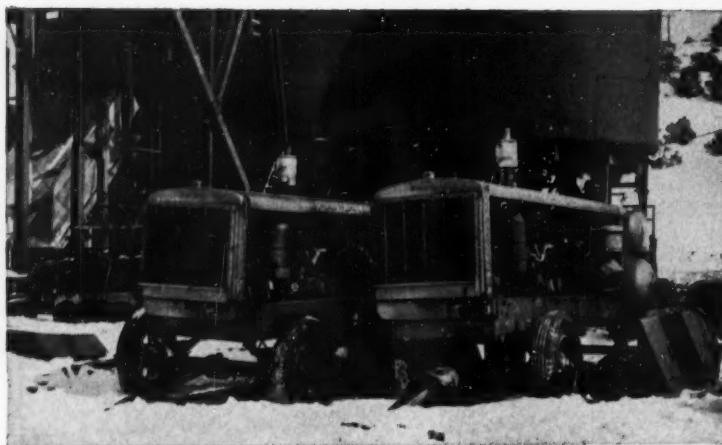
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These heavy-duty Diesel-driven **PORTABLE AIR COMPRESSORS** deliver 1200 cfm. Whenever air demand falls off, however, the CP Gradual Speed Regulator reduces engine speed proportionately, yielding greater economy and minimizing wear. CP Diesel and gasoline portable compressors range from 60 cfm to 600 cfm.



CP PORTABLE SLUDGE PUMP handles up to 15% of solids. Pumps grout, or hydraulically transports sand or muck. Handles water containing sand or rock without causing rapid wear of expensive replacement parts. No priming necessary. Operates on 105 cfm compressor.

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*on
Big Jobs*

Rugged tubular chassis and drill carriage of the **G-300 WAGON DRILL** provide rigidity and strength without undue weight. The tubular "H" structure, that supports the drill carriage, affords great flexibility, stability, and minimizes vibrations. Designed to take full advantage of the high drilling speed and strong rotation of the CP 4-inch 70-N Drifter, the all-around sturdy construction of the G-300 maintains correct alignment under most difficult conditions.



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Amsco Chains Get Tougher With Use

How AMSCO Manganese Steel Chains Acquire Progressively Greater Resistance to Impact and Abrasion.

Actual case histories prove that AMSCO Manganese Chains outlast ordinary chains by more than 6 to 1 where impact and abrasion exist. For example, on one conveyor operation, ordinary chain had to be completely replaced every three months. When AMSCO Manganese Steel Chain was installed, only a small fraction of the links were replaced during a test period of over 24 months.

Users of AMSCO Chains benefit by unusual freedom from expensive chain replacement, breakage, maintenance-down-time and other problems caused by impact and abrasion conditions.

AMSCO Manganese Steel Chains have the unique ability to work-harden with use. In rough service, they develop a surface hardness up to 500 Brinell. They also acquire a hard glass-like polish that helps shrug off grinding abrasion. All AMSCO Manganese Steel products — tough when produced — possess the extra-value quality of actually increasing durability with in-use battering and grinding.

AMSCO Chains are made of Manganese Steel — the "Toughest Steel Known." They are produced in many standard and special shapes by American Manganese Steel Division — largest producer of manganese steel for all industry.

If you use chain, and desire a more durable alloy, you are invited to contact AMSCO. There's a good chance we can save you money and provide chains that will outlast your service life expectations.

Drag Line Type Chain—
Mining & Excavating

AMSCO Chain Assumes Many Forms To Serve Industry. A Few Are:

Detachable Chain—
Bucket Elevating

Pinlock Type with Cast-on
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Foundries at Chicago Heights, Ill.; New Castle, Del.; Denver, Colo.; St. Louis, Mo.; Los Angeles, Calif.

Offices in principal cities. In Canada: Joliette Steel Limited, Joliette, Quebec.



OUTMODED SPAN over Yazoo River near Vicksburg, Miss., is lowered 80 ft to ground for move to new site. Saddles that support jacks rest on setbacks and are anchored across top of pier. Guides welded to truss ends stop excessive horizontal movement.

Lift-Slab Technique Lowers Bridge

THEY REVERSED THE ROLE of some Youtz-Slick slab-lifting jacks down in Mississippi: Instead of raising concrete building floors or roofs, the jacks lowered two 340-ton, 350-ft steel truss bridge spans. Lowered them 80 ft, too, at the rate of 1 ft per hr.

The through-truss highway bridge had been built across the Yazoo near Vicksburg in 1926. Outmoded and already replaced by a new structure at a better location, it had been sold by the state and was to be dismantled and moved to a new county road downstream.

Lower chord of the old two-span bridge was 120 ft above river bed and 80 ft above high ground at the end piers, which made dismantling on falsework prohibitively expensive. Instead, each of the spans was lowered between the piers to the ground by eight 60-ton hydraulic jacks normally used in Youtz-Slick lift-slab work (CM&E, April '52, p 50). The job was handled by the Texas Construction Co., of Dallas.

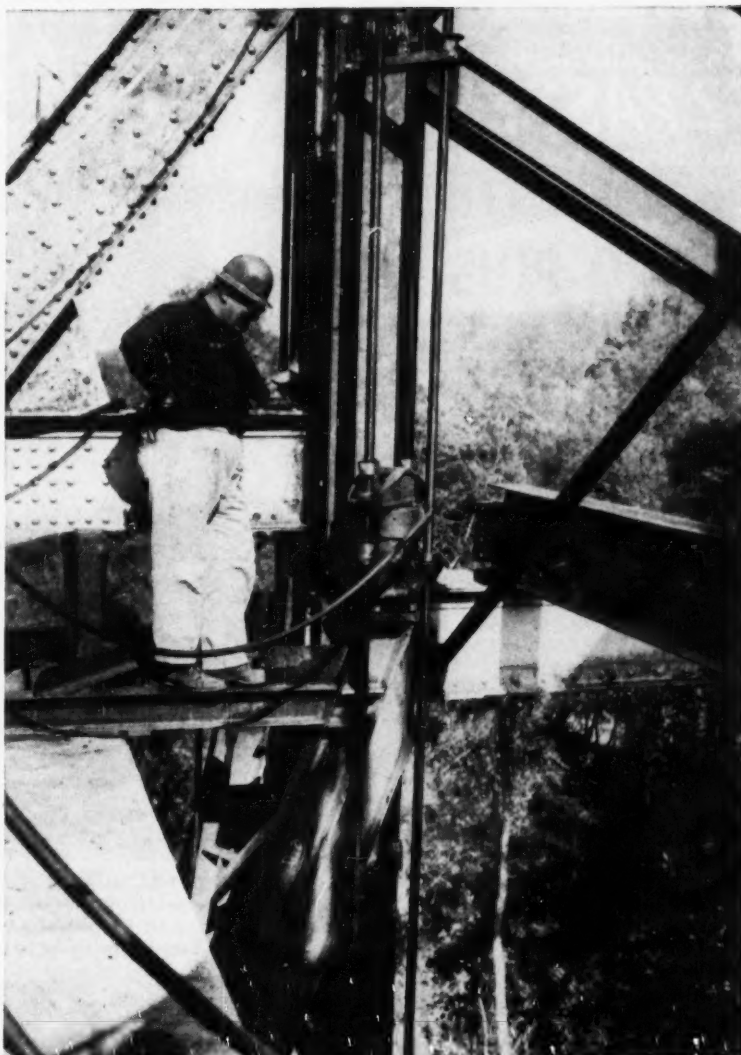
Span Length Shortened

First operation was to reduce the weight of each span to 340 tons by removing the concrete deck. Then the span ends had to be cut off so the structure would fit between the piers as it was lowered. To prepare for this surgery, channels were welded to connect the lower chords and end diagonals to carry the load when these latter members were burned through. Pier faces were vertical, fortunately, so the trusses had to be shortened only enough to give 2-in. clearance at each end.

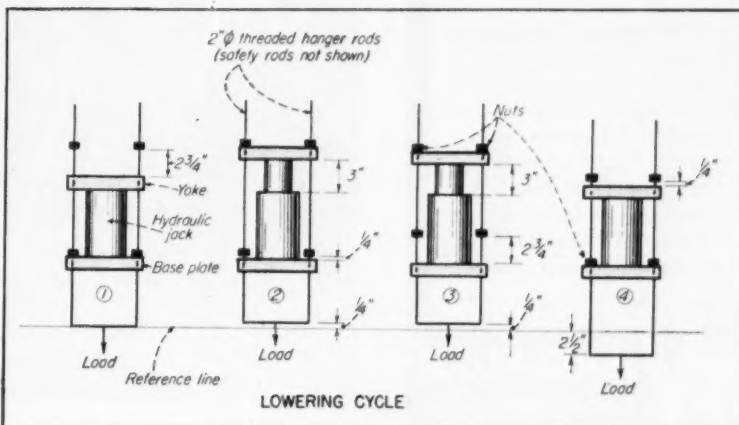
Fortunate, also, was the fact that there were 2-ft setbacks on either side of the piers 5 ft down from the top. On these setbacks and anchored across the pier top were placed heavy saddles welded of steel beams and angles to hold hydraulic lowering jacks.

The jacks, two at each corner of the span being lowered, had a 3-in. maximum extension, 64-sq in. piston and operated at 2,000 psi. Each of the eight jacks suspended its share of the load through two 2-in. threaded rods of high-tensile (150,000-psi) steel fastened to the end of the truss. These hanger rods passed through the jack base plate and through a yoke on the top of the piston. Two nuts on each rod allowed the load to be taken either by base plate or yoke.

The span was lowered $2\frac{1}{2}$ in. at a time. At the start of each cycle, the load was held by the hanger rods' lower nuts bearing on the jack



HYDRAULIC JACK, one of eight that lower 340-ton span, takes its load through nuts on two threaded hanger rods that pass through jack base plate and yoke on piston. Extra two rods are for safety and to assume the load when additional lengths must be added to hanger rods. In this photo, jack is at start of cycle, shown at (1) in diagram below.

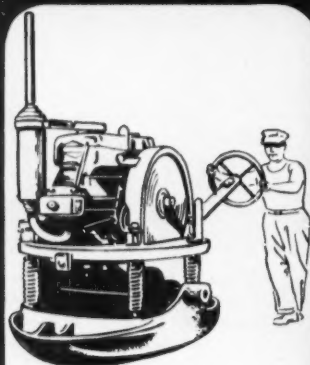


JACKING CYCLE, which lowers span $2\frac{1}{2}$ in. at a time, begins with lower nuts bearing on jack base plate to carry the load (1). When piston is extended 3 in., the load transfers to upper nuts (2). Lower nuts are moved (3) and piston retracted (4) to complete cycle.

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in **"2 PASSES"**
than heavy equipment
gets in 6 and 8

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It weighs only 1.6 tons—yet outperforms 12-ton rollers, 7-ton vibratory rollers, 25-ton rubber-tired rollers on any type of granular soil. "Walked" by one man, it compacts 2000 sq. ft. per hour—8000 sq. ft. when towed by tractor—penetrating up to 40 inches—and getting in almost anywhere. On roads, railway embankments, back fills, dams, airfields, heavy duty floors and foundations—it helps you show a profit when other equipment can't. Write for bulletins, names of users, and nearest distributor.



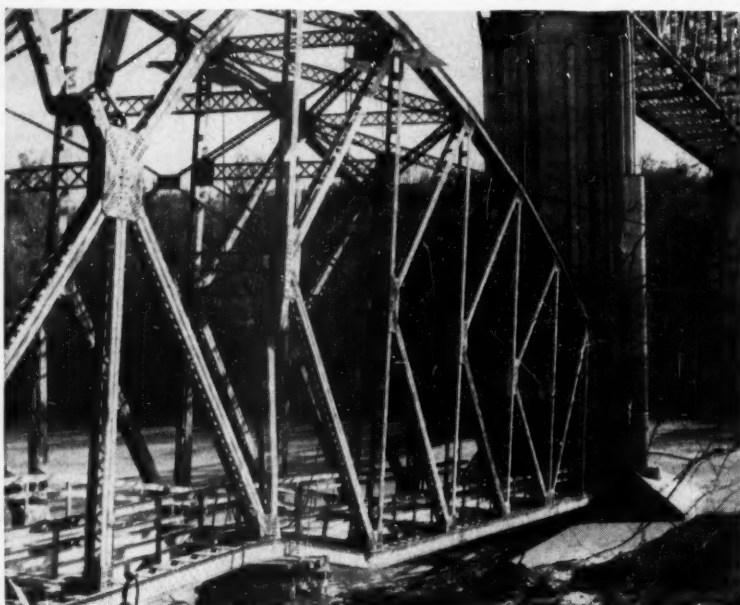
TYPE MRJ-6 Terrapac is powered by a 10 HP Diesel engine. One-man operation. 65" x 45-5/16" base steers easily for maximum maneuverability, forward or backward. Rubber-tired wheels attach for transportation.



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WORLD PIONEERS IN APPLIED VIBRATION



FIRST OF TWO 350-FT SPANS inches downward (here it has been lowered some 25 ft) while twin awaits its turn. Distance from water to top of center pier is 105 ft, but it was only 70 ft when job was let. Low water forced change in bridge moving procedure: Instead of being landed on barges to be moved intact, span was landed on ground for dismantling.



DAMAGED SPAN rests on ground after human error allowed it to fall free for last few feet of 80-ft descent. Equipment worked perfectly, but jack tender let wrong nut take load, kicking jacks off supports and dropping span. About 25% of members were damaged. Contractor, insurer and surety expect that jacking of second span will go without hitch. (Text continues on page 118)

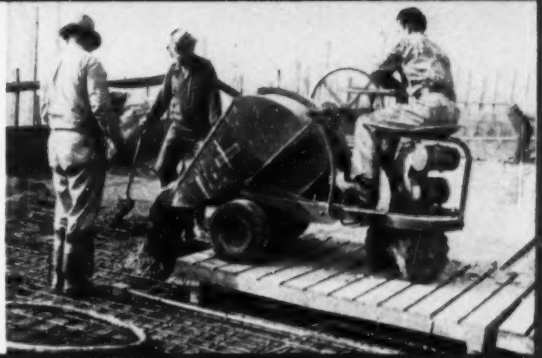
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1

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Big savings on concrete jobs begin when Whiteman Power Buggies are used for placing. These willing workers actually do the work of six men with hand buggies. They scoot over light scaffolds at 16 mph, up 25% grades, over soft earth. They're gluttons for work, never get tired. Priced so low, can pay for themselves on just one job!



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A black and white illustration showing two hands holding a large bolt. The top hand is positioned at the head of the bolt, while the bottom hand supports the shank. The bolt is oriented diagonally across the frame. The background is a dark, textured wash.

Straight, sturdy shanks

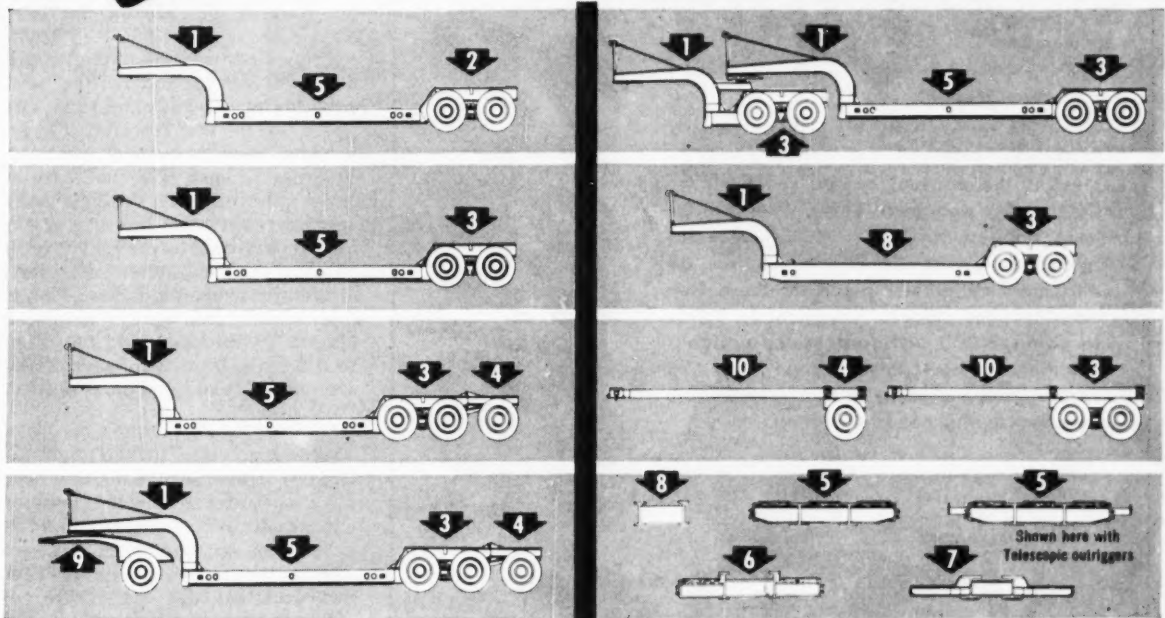


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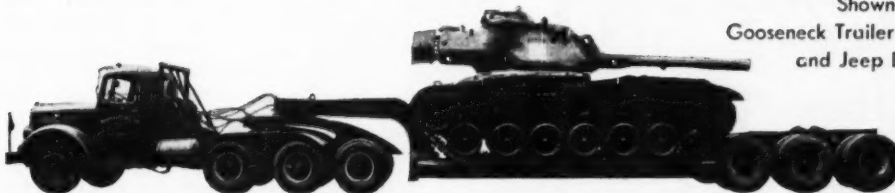
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Talbert Trailer component parts permit simple conversion for varied or specialized hauling problems.



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For additional details write for new Talbert general catalog No. 104

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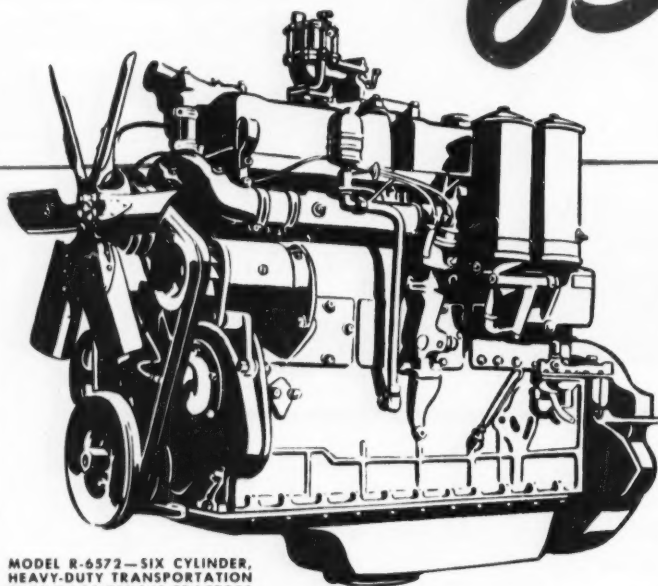
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Complete

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35
63

One big reason why it's wise to choose Continental-powered vehicles and equipment is the unusual completeness of the Continental Red Seal line. There are 28 transportation models and 35 industrial (gasoline, Diesel, L.P.G.)—a total of 63 different basic power plants in these two classifications alone. Continental builds to some 2,000 different specifications, spanning a horsepower range from 14 to 277, and including at least one engine matched to the needs of every job.



MODEL R-6572—SIX CYLINDER, HEAVY-DUTY TRANSPORTATION ENGINE FOR TRUCKS, TRACTORS AND BUSES.

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For lawnmowers, garden tractors, sprayers, and similar equipment, Continental manufactures five series of air-cooled industrial models—vertical shaft and horizontal shaft—from $\frac{3}{4}$ to $2\frac{1}{2}$ h.p. For full information, address Air-Cooled Engine Div., 12800 Kercheval Ave., Detroit 14, Mich.



Continental Motors Corporation

MUSKEGON, MICHIGAN

JACKS LOWER BRIDGE . . .

Continued from page 114

base plate. The upper nuts were spotted $2\frac{3}{4}$ in. above the yoke on the retracted piston. Extension of the piston its full 3 in. picked up the upper nuts and raised the span $\frac{1}{4}$ in. so the lower nuts were free. These were run up the rods until they were $2\frac{3}{4}$ in. above the base plate, after which the piston was retracted to lower the span. In this position the lower nuts again took the load by bearing on the base plate, and the upper nuts had $\frac{1}{4}$ -in. clearance above the yoke so could be moved up the rod for the next lowering cycle. Thus the span was raised $\frac{1}{4}$ in. and lowered $2\frac{3}{4}$ in. for a net gain of $2\frac{1}{2}$ in. at each bite.

A man at each jack took care of moving the nuts on the hanger rods. He also kept nuts on two safety rods in position to prevent a drop of more than a fraction of an inch in event of hydraulic failure. Hanger and safety rods were of staggered lengths so the load could be transferred to the latter while additional sections were coupled on as needed.

Ends Lowered Alternately

The span was jacked simultaneously from both ends, at first, with all jacks controlled through one hydraulic panel. However, there was no mechanical connection between operations at each end, and this lack of positive coordination caused some horizontal movement in the structure. The procedure then was changed and the ends lowered alternately through one jack cycle ($2\frac{1}{2}$ in.).

When the first span had been lowered 74 ft, one safety-rod nut inadvertently was allowed to bear on its jack's base. The entire load of that jack shifted to the rod. The jack tilted and slid from its support, twisting the span and causing all jacks to become disengaged. This dropped the structure the remaining 6 ft to the ground.

The accident was due entirely to a human error—there was no mechanical or structural failure. And the second span is now being lowered with the same jacks, rods, and confidence in success.

Texas Construction Co., Dallas, did the work for Hyde Construction Co., Jackson, Miss., who had bought the bridge from the state. Bill J. Shelton, J. A. Stavast and E. A. Thornton supervised Texas' operations. Subcontractors were Dallas' S&L Construction Co. and San Antonio's Lift Slab Co., for whom M. D. Wilson and Kenneth Hewett were superintendents.

You'll find the Head Protection for YOU

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Job at



M.S.A. SHOCKGARD

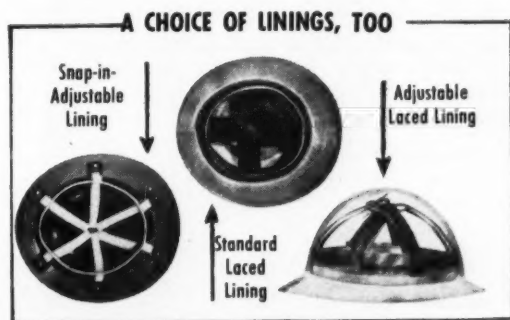
Maximum head protection in electrical-hazard areas—from high voltage contact and falling objects. Minimum protection tested at 10,000 volts. All-plastic shell—no metal parts. Special Web Cradle straps; one-unit leather lining.

MODEL T ALUMINUM HAT

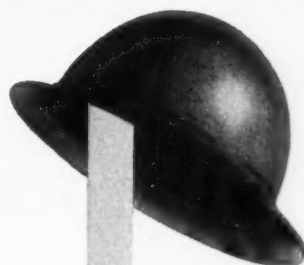
Light, cool and comfortable. Ideal for those desiring a metal hat. Tough aluminum alloy resists blows from falling or flying objects. Rigid brim protects face, neck, shoulders. Snap-in-Adjustable lining only.

M.S.A. COMFO CAP

Combining lightweight comfort with head protection, the M.S.A. Comfo Cap is well-balanced, durable. Low crown design makes it ideal for low coal mining. Standard type lining only.



Call the M.S.A. man on your every safety problem . . .
his job is to help you.



M.S.A. TYPE K SKULLGARD

The most popular and accepted work hat!

Tough, laminated bakelite composition safeguards workers from every head hazard. Perfect balance, light weight results in greater wearing comfort. Available in any of the lining styles illustrated below.



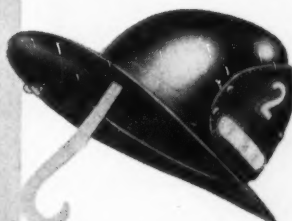
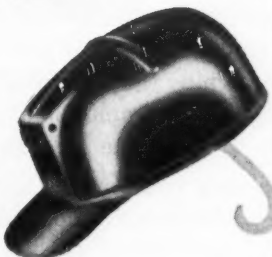
M.S.A. GLASS FIBER HAT

High pressure molded, this hat provides perfect head protection. Smooth contour design deflects falling objects and minimizes blows and bumps. Featuring the Snap-in-Adjustable lining, this head protector comes in the following stock colors: Red, White, Yellow, Green, Blue, Gray, Black.



M.S.A. TYPE B SKULLGARD

The Type B offers the best head protection available in cap-type style. Rigid peak, with reinforced beaded edge. Accommodates all linings except Snap-in-Adjustable.



M.S.A. STREAMLINED FIREMAN'S HELMET

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M.S.A.'s complete line of hats and caps meets your every job, style, color, and lining needs. They are smart looking, light weight, comfortable, well-ventilated. They are designed for all service conditions, individual preferences. They have rugged strength and durability. Workers are safer, better satisfied when their head protection fits the job. Write for details.

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... and whether your next concrete job is in Missouri or Mississippi . . . Montana or Minnesota, you'll see on these pages throughout this year how *air entrainment*—correctly used—can help you deliver concrete that's tailor made for your particular job . . . your particular location.

We've gone all across the country, and come back with a stack of stories telling how concrete men everywhere are using *correct* air entrainment to produce quality concrete every time . . . *every place*—in spite of local climatic extremes and the various complexities of the mix. In the coming months we will report the experiences of construction men who know the advantages of designing for particular conditions . . . and regulate the amount of air entrained in their concrete accordingly.

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Merritt-Chapman & Scott's diver goes over the side to prove that...

Air-Powered Saw Can Be Used Anywhere... ...Even Under Water

Another Equipment Development Report

By JAMES M. CONNOLLY, Equipment Editor



EASE OF OPERATION and compaction of saw is demonstrated here as carpenter shaves 3½-in. slice from 14x14 timber.

ONE OF THE MOST versatile tools in the construction industry today is the Wright Power Saw. It can be used anywhere—even under water—and will operate in any position. It is air-driven and has two interlocked reciprocating blades with opposed strokes. These operate at 1,500 strokes per min and duplicate the reciprocating motion of a two-man saw with amazing cutting speed. Air is fed into the saw through a ¾-in. hose of unlimited length, and it will operate with less than 60 fpm of air at 70 to 100 psi.

The entire unit weighs only 14½ lb, and over-all length is 46½ in. The 18-in. blades travel through

21 in. while cutting and leave a kerf of only 3/16 in. Early models of the Wright Power Saw could crosscut a Douglas fir 12x12 timber in 1 min, 30 sec. Current improved models do the same job in 45 to 55 sec. The tool can be used also, after a little practice and experience, to miter, rip and bevel.

Left-handed operators can use the saw, as well as right-handed men. A safety throttle must be turned and held against spring compression to operate the saw, which stops automatically the instant the throttle is released. The handle is fully adjustable for cutting in any position. Any 60-cfm compressor will operate one saw



DELIVERING an average of more than 4,000 cu. yds. of solids per working day, this big Ellicott 12" hydraulic dredge saw plenty of action on a recent New Jersey road project. A total of 250,000 cu. yds. of wet material was removed, then 600,000 cu. yds. of approved fill was deposited for the road bed. Job report reads: "The project, which required the dredge to be moved overland from one site to another several times, was completed in just 8 months!"

Ellicott dredges are built for long-range, profitable service under all types of conditions . . . built to *outperform all others on every basis!* For more information, write for Catalog 825. Address: **ELLICOTT MACHINE CORPORATION**, 1605 Bush Street, Baltimore 30, Md.



SAW WITH AIR . . . Continued

and a 105-cfm compressor will operate two.

No such development and current level of acceptance is accomplished overnight. It represents the growth and development of an idea by John Wright, its inventor and president of the company.

Several years ago, while financial adviser to a lumber concern in Florida, John Wright was surprised to find that existing power saws had not been accepted widely by pulpwood producers and loggers, and that the old-fashioned method was still predominant—the use of hand labor and two-man saws.

He thought that he could duplicate the reciprocating action of the two-man blade in a machine that would be air-powered and would operate at more than 1,000 strokes per min. Lumbermen told him that the idea had been tried and that such machines always "shook the daylight" out of an operator because of their reciprocating action.

Wright came up with a simple solution: Two parallel, interlocked blades with opposed strokes, the energy and momentum of each one balancing the same in the other, leaving the operator unaffected. It was a long, hard road from this idea to the first working model.

The First-Born

After three years of experimenting, testing and research, the first working model was ready for a contractor to use—in 1949—and then passed a 6-month on-the-job test with enthusiastic reports by the contractor — and no breakdowns. (Incidentally, the original model is still in use today, having had only slight adjustments and incorporation of several improvements since then.)

Shortly afterward, Joseph Hepworth, job superintendent for Merritt-Chapman & Scott Corp., contacted Wright and said that he wanted a saw to cut off submerged timber pile tops. Wright didn't have underwater work in mind when he designed the saw, but there was no apparent reason why the machine shouldn't work submerged. Gasoline- and electric-powered saws were out of the question under water.

The job in question was installation of an outfall sewer at nearby Fairfield, Conn., where two rows of creosoted piles had been driven on 12-ft centers for a distance of

(Continued on page 124)



LIKE Spring and Baseball...Summer and Swimming...Autumn and Hunting...Winter and Snowballs



They Go Together All Year 'round

All Wheel Drive and All Wheel Steer

Yes, whether it's pulling a wet ditch, with the rear drivers up where the footing is good; or finishing a wide shoulder without leaving tire marks; or reaching out for a tremendous windrow and missing it with all wheels; or steering the rear

wheels against the side thrust when widening out... whatever the season... whatever the job... All-Wheel Drive and All-Wheel Steer work together as a team... each making the other just that much more effective.

NO TWO WAYS ABOUT IT . . . an Austin-Western Power Grader goes places where ordinary motor graders cannot go... does things they cannot do... saves time and money on every job.

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Road Rollers • Motor Sweepers



Construction Equipment Division

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Jacksonville, Florida

Contr: Duval Eng'g & Cont'g Co.



LARGE VOLUME DRAINED AT VERY LOW FUEL COST

EXCAVATION ON this job was 15 ft deep (see photo) and ground water had to be lowered 10 ft in difficult soil (very fine sand with clay lenses.) How would you have estimated fuel requirements, figuring approximately 400 ft of header-line perimeter?

- Actually, one diesel-powered Griffin pump, working continuously 'round-the-clock, consumed only 35 gal of fuel each 24 hrs, even though on jobs of comparable scope, the average diesel pump will usually eat up anywhere from 40% to 80% more than this quantity. Thus the every-day savings to the contractor were appreciable.

- Another interesting feature was the use by Griffin engineers of a new type slip-on swing joint (see photo) to speed installation of the wellpoints. Any wonder contractor termed the job "100% success!"

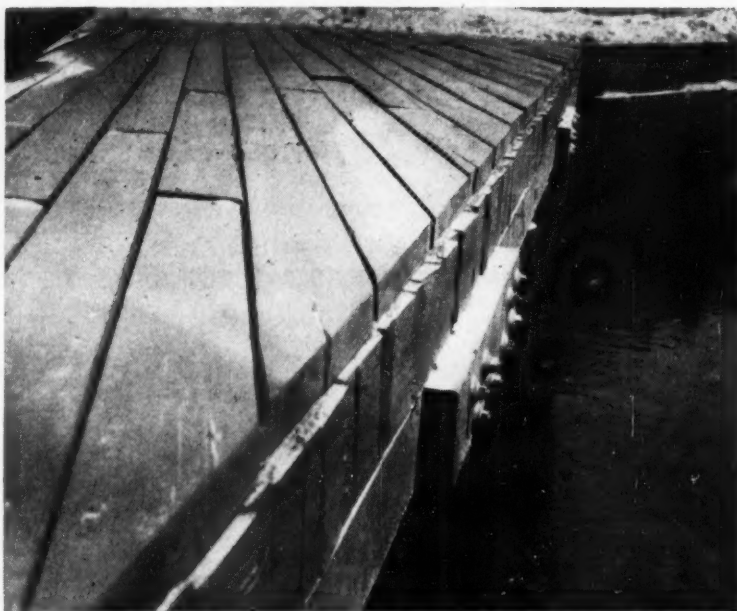


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881 East 141st Street, New York 54, N. Y.
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Toronto Montreal Halifax

SAW WITH AIR ... Continued from page 122



TIMBER COVER over a drainage creek was part of contract in connection with runway installation at newly opened Newark airport. Here Union Building & Construction Co. again used a Wright saw to cut all piles, caps, stringers and decking. Note long, straight diagonal cuts on 3x12-in. decking, as well as crosscut and rip cuts on blocking beneath.

480 ft to provide support for the outfall line. They varied in diameter from 14 to 18 in. Up to that time the job of cutting such piles under water called for two divers with a two-man saw and two hours' time for each pile. The Wright Power Saw needed only one diver, and cutting time on each pile averaged slightly more than 1 min.

Another tough job for the new timber-cutting saw occurred when Union Building & Construction Co. of Passaic, N. J., used it in cutting off tops of some 800 exposed piles. This time the job was a combination bridge and dam to first cross over water and later control its level.

Some 1,200 piles in all were driven, but time was at a premium in trimming tops on the last 800. At the insistence of the contractor, the Wright Co. not only provided four new air-powered saws, but also had four more available as stand-bys. These weren't needed since four workmen, each armed with a saw, finished the job of cutting all 800 piles in 1½ days.

There have been other important users in the contracting field. North Atlantic Constructors bought 11 saws to take to their Arctic air base job at Thule, Greenland. Six months later they sent an order for six more.

The Navy has put the saws

through exhaustive tests and has approved them. According to the official Navy test program report, the saws "were used for heavy timber construction, logging operations, dock and underwater work" and were found "highly successful in all phases." They are now cataloged as an item of issue for the Navy Seabees, and the U. S. Marine Corps, and currently are under test by the Army Field Forces because of their "lightweight, one-man operation, speed, and variety of cutting positions."

The Wright Company has had its downs, as well as its ups, on the road to success. One incident caused a lot of trouble. The instant response to the tool and immediate demands for it put the company on a three-shift basis, and quality control became more difficult. For a time, an error was made repeatedly in the overthreading of a small pinion shaft for each saw by only ¼ in. This set-up delayed chain reaction, however, with the pinion shaft tearing into a bushing, the bushing wearing down and the pinion vibrating so that it caused fatigue breaks in the main piston and/or shaft. The sequence and seriousness of breakdowns were dependent upon the amount of time each saw had been used since delivery.

Wright discovered the error

two days before the first complaint came in, and a quick check showed that hundreds of saws had been OK'd after passing tests, and were now in the hands of users and distributors.

He immediately told his distributors what had happened and asked them to replace all faulty parts on saws then in the hands of customers. At the same time he recalled every saw on the dealers' shelves and replaced each one with a new, trouble-free model.

Company representatives went out meanwhile and traveled more than 29,000 mi finding saws in use, explaining the error and replacing parts.

The company has been improving the saw constantly and incorporating suggestions from users. During this course of development, 18 refinements have been made and all have been sent to dealers at no additional charge. Whenever a saw is serviced by the factory, it is automatically "remanufactured" and returned to the owner as a new saw in appearance as well as construction.

Going Places

Wright Air Saws are fast becoming standard equipment on heavy construction jobs, in mines, shipyards, and railroads throughout the world—the company's sale department has set up stocking distributors in Europe, South America, and the Far East, as well as throughout the United States and Canada.

The Wright Air Power Saw is only the first of a line of new products for the logging and construction fields. For two years now the company has been experimenting and improving gasoline- and electric-powered models, which will be announced in the near future. Wright Power Saw and Tool Corp. headquarters are in Stratford, Conn.



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Stop Damaging Building Floors, Streets & Walks —
SAW BEFORE BREAKING



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Save up to 50% in labor and material. Saw repair patches — saw gas, water, sewer and air line trenches in floors, streets, walks, runways and highways. Save, too, by sawing contraction joints — eliminate costly hand forming and spalling.

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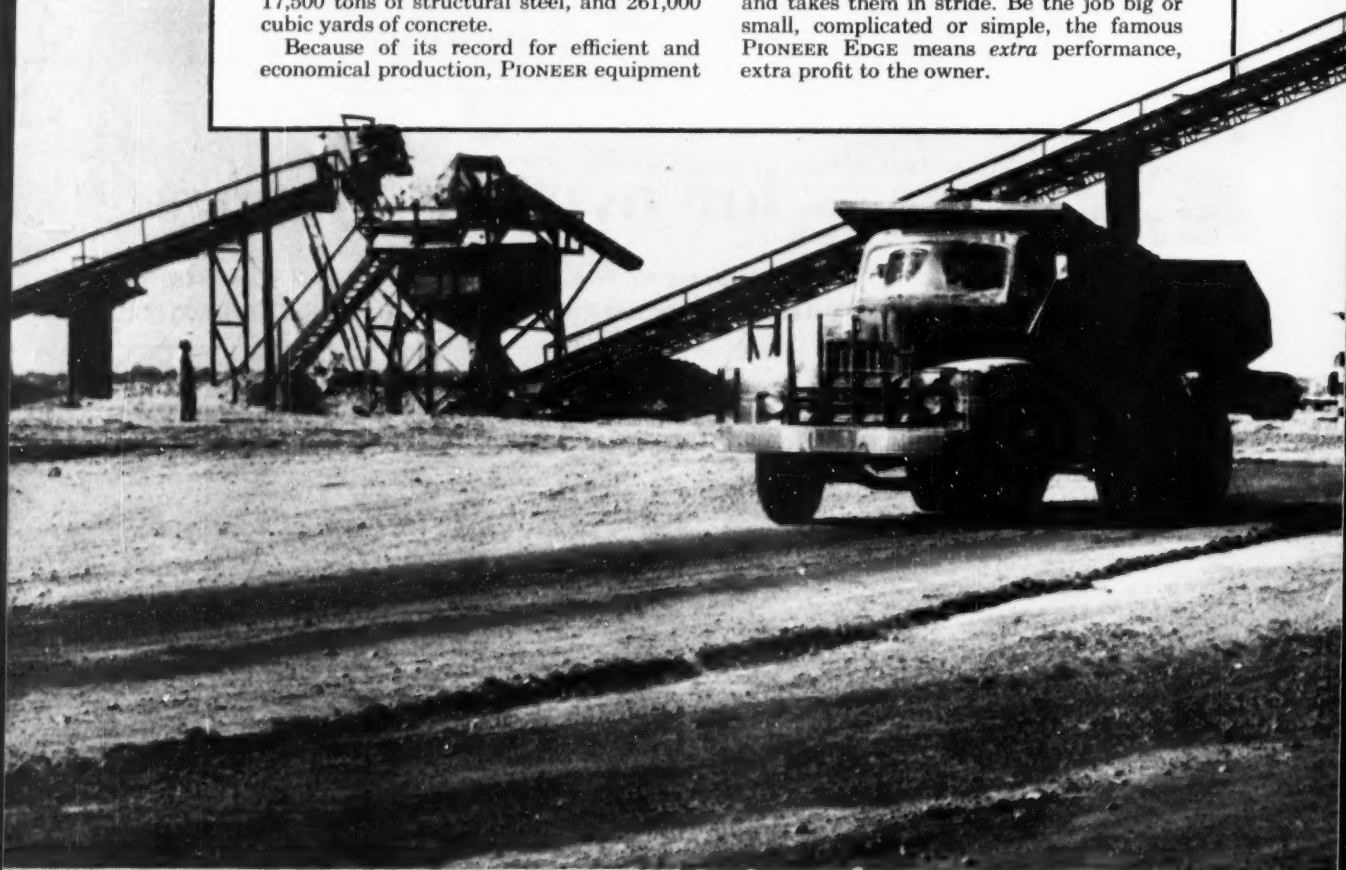
Before it's completed, this mammoth project will require 18,700,000 cubic yards of earth and rock fill, 420,000 yards of riprap, 17,500 tons of structural steel, and 261,000 cubic yards of concrete.

Because of its record for efficient and economical production, PIONEER equipment

was chosen for the important job of supplying all sand and gravel for the concrete and various other uses.

Shown here is the specially designed plant which is turning out four sizes of washed material ($-\frac{3}{4}$ ", $-1\frac{1}{2}$ ", -3 ", and 4M to 100M sand) at an average rate of 2,500 to 2,800 yards per day.

A big assignment... yes. But PIONEER equipment is accustomed to big assignments and takes them in stride. Be the job big or small, complicated or simple, the famous PIONEER EDGE means *extra* performance, extra profit to the owner.



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Crushers, feeders, conveyors, screens, complete plants...PIONEER Equipment offers you an operating edge that means *extra* production from each dollar invested. This is the EDGE that helps you finish jobs ahead of schedule, that so often changes loss to profit. Before you bid, be sure you have the PIONEER EDGE on your side!

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**COMPLETE
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FOR SALE OR RENT



AIR STARTING MOTOR EQUIPPED 34-ton Euclid rear-dumps wait to be loaded on the Mesabi Iron Ore Range in Minnesota. Each truck is powered by two 200-hp Cummins diesels and has a pair of Model 9BM Ingersoll-Rand vane-type motors. Note air receivers behind front wheels.

Air Motors Start Cold Diesels

COLD WEATHER STARTING of big diesel engines is a major job in those areas where temperatures plummet way below zero. After an all-night shutdown under these conditions, the big power plants are hard to start. And they require some initial turning over of the crankshaft before starting, to avoid almost certain damage brought on when an engine is forced to start before it has been limbered up somewhat.

Air starting motors are being employed to ease the starting problem and to cut maintenance costs on electrical systems as much as 70%. One proving ground for this significant research into cold weather starting has been on the Mesabi Iron Ore Range in Minnesota.

Following two years of rigorous field tests, one of the larger mining companies on the Mesabi Range is turning to air starting motors for its 20- and 30-ton ore trucks. At the close of 1951, the company had in operation 19 vehicles equipped with air starters and another 40 on order. On the basis of experience to date, it is estimated that the adoption of air starters will effect a saving of about 70% in electrical maintenance costs. Other advantages noted are: Improved cold weather starting, greater ease in shop and field servicing, and simplification of electrical systems.

Cooperating in the application

of air-starting motors to heavy ore carriers were engineers of the Ingersoll-Rand Co., the Euclid Road Machinery Co., and the mining company.

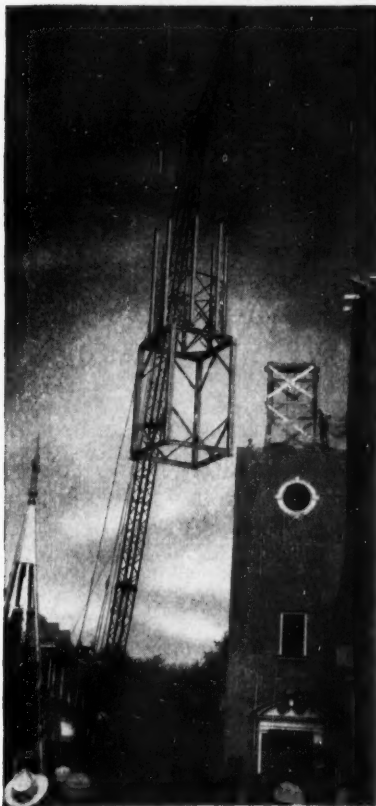
The first step was taken in the fall of 1949 when a Model 9BM Ingersoll-Rand air starting motor was installed on a 300-hp Model NHRS600 Cummins diesel, powering a 22-ton rear-dump Euclid. This vane-type air motor develops from 7 hp with 75 lb air to 16 hp at 150 psi. Air is supplied by the truck's regular air-brake compressor to an 11-cu ft auxiliary air receiver. Since this compressor idles most of the time anyway, there is ample capacity to serve the starting system, keeping the receiver at 150 psi.

Later on they installed a Model 20BM air-starting motor to crank the 400-hp Model NVH1200 Cummins diesel on a 34-ton Euclid truck. This I-R air motor produces from 19 hp at 75 psi to 41 hp at 150 psi.

For two years the test units withstood the rough iron range service, cranking diesels under the difficult climatic conditions of Northern Minnesota with small expense for starter maintenance. The success of the test was signalled just two years after the first installation when the company put into service at one of its mines eight 34-ton rear-dump Euclids, each with a

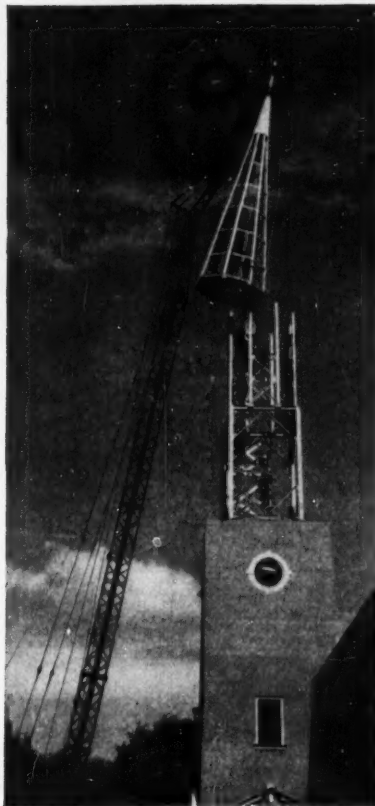
(Continued on page 130)

NO MATTER WHAT THE JOB — You can do it better with a versatile LIMA

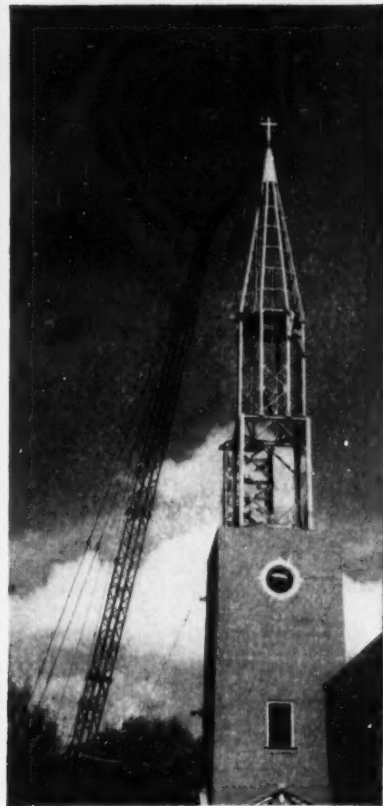


Photos courtesy of Roanoke Times, Roanoke, Va.

● Lima 34-T crane lifting 32-foot, 5½-ton rectangular and octagonal shaped section in place on brick base.



● Next the 2,800-pound cone is raised to its spot on top of the lower section of the steeple.



● Note the switch in direction of the 5-foot cross . . . a last minute change.

A precision job like this one calls for the smooth, sure operation that their Lima 34-T crane gives Hawkins and Cox, Roanoke steel erectors. The seven-ton steeple for the new First Methodist Church in Salem, Va., had to be lifted to 120-feet above ground. This was done effortlessly by the reliable Lima Paymaster Truck Crane.

The crucial test came when a caucus of watching Methodists decided the cross ought to point North-South so that the sun would shine on its faces. Although he had only a few inches of cable left, the

crane operator deftly lifted the entire cone enough so that it could be given a half turn and lowered into place with the sun smiling on the cross.

And anywhere under the sun, you'll find Lima cranes and shovels taking in stride a myriad of diverse tasks. *You*, too, can count on a Lima shovel (¾ to 6-yards) or crane (up to 110-tons) for any job. If you'll drop us a line, we'll gladly suggest the Lima machine that will give you highest capacity and lowest operating cost for your regular or special work.

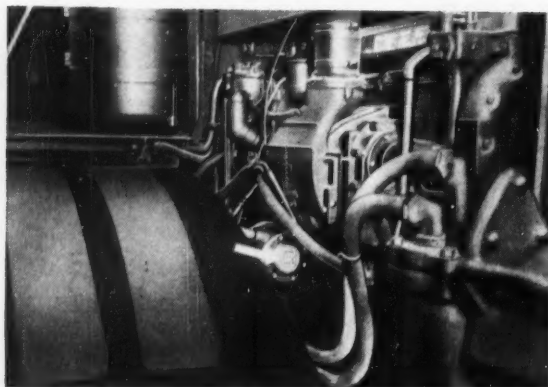
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Construction Equipment Division
LIMA, OHIO, U.S.A.

Construction Equipment Division



SMALL, BUT POWERFUL, air motor is mounted on the side of a General Motors 200-hp diesel in yet another Euclid truck. It is rated from 7 to 16 hp, depending upon air pressure.



AIR RECEIVER is recharged easily from shop air line when truck has been out of service for some time. In the field, another truck can be brought alongside to fill the 11-cu ft tank.

pair of 9BM air motors to crank the twin 200-hp Cummins diesels.

This was followed a few weeks later at another mine by a new fleet of 34-ton Euclids with twin 200-hp Model 6-71 GMC diesels, each with a 9BM air starter. Size of the air receiver had been reduced to 9 cu ft, since this had proved adequate for starting requirements in the normal work schedule. Forty additional trucks with air starters were on order.

The engineers report that air starting eliminates many of the difficulties experienced with electrical starting systems. It has permitted replacement of the somewhat complicated and expensive 12- and 24-v electrical systems with simpler, more economical 6-v systems.

The 12-24-v battery is essential equipment for electric starting but, with the cranking job taken over by air, the reduced electrical re-

quirements can be met easily by the generator which produces 75 amp at idle speed. Thus, the comparatively cheap 6-v battery is in the line only as an accumulator and stand-by.

The 12-24-v equipment took quite a beating on the rough iron range terrain and required a great deal of maintenance. This not only involved parts and labor, but also took trucks out of service. There
(Continued on page 132)

STANG WELLPOINTS IN YUMA, ARIZONA

LOWER CONSTRUCTION COST



Before: Need for dewatering is obvious. Note beginning of ramp at right.



After: Completed excavation for new forebay and pump-pit for Yuma County Water Users' Association. Note dry excavation going well below surface of nearby drainage canal.

An additional benefit from the use of wellpoints was obtained on this new Boundary Pumping Plant excavation owned and constructed by the Yuma County Water Users' Association, Arizona.

Due to the close proximity of the drainage canal (background, lower photo) and the high ground water level in this extremely unstable material, dewatering was an absolute essential.

Stang wellpoints were installed with header at ground water level. As ground was drained, and excavation progressed, a ramp (right, top photo) was built into the pit. This made it possible to use the most economical equipment units for disposal of excavated material. Only alternative to wellpointing would have been a sheeted excavation which would have required the use of a crane and clamshell bucket and been far more costly than the use of carryalls.

Note in lower photo the dry completed excavation. The old forebay and pump-pit visible adjacent to the excavation were kept in continuous operation and in a stable condition during the construction period.

John W. Stang Corporation can save you time and money, too, on tough excavations. Call them up next time you need flexible, economical dewatering.

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In most cases, your Thermoid distributor can select the belt that will serve your needs most economically. Where unusual conditions exist, he will call in an experienced Thermoid sales engineer.

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Rubber Sheet Packings • Molded Products
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are important savings in reduced replacements of generators, voltage regulators, batteries, sealed-beam headlamp units, fuses, cables and other items. The over-all cost of electrical maintenance on air-craked vehicles has been reduced about 70%.

It is easy to obtain compressed air for cranking under all conditions encountered. Trucks normally are in service day and night, stopping only for change of shifts, lunch hour, and maintenance. This involves an average of six starts a day. On this schedule, the brake

compressor easily keeps the air receiver supplied.

If a truck is out of service long enough to lose its air, the tank is pumped up by the stationary garage compressor through an outside fitting on the truck's air receiver. If repeated stalls cause a truck to exhaust its air supply in the field, it is a simple matter to run another truck alongside and pump up the air tank of the stalled vehicle.

By contrast, if the battery runs down on an electrically cranked truck, it is necessary to put in a

replacement battery and charge the old one. The 24-v batteries used on such vehicles weigh about 100 lb and are installed 8 ft above the ground. Replacement is not an easy job.

Even after putting a torch to the pan, cold engines may be hard to start. In such cases, engines with air starters can be hooked to an air supply and turned over as long as necessary. Air power is not affected by temperature changes, but a battery's potential is lowest in cold weather. The use of shop air to turn over an engine also is a convenience when a truck is undergoing repairs and adjustments.

Air Supply

On these trucks, the air receiver is mounted to the truck frame on the right side under the cab. Air is delivered to the receiver from the compressor through flexible rubber hose. A Tee connection at the compressor and check valves in each air line keep the starting air system independent of the brake-air system and guard against loss of brake air. Another section of hose connects the receiver through a quick-opening valve to a globe valve in the cab, and a third section of hose leads from the quick-opening valve to the starting motor.

The air motor is compact, rugged and simple in design. Five vanes of special phenolic material seat in slots in a hardened steel rotor which turns in a cylinder of hardened alloy. The rotor is supported by ball bearings mounted in the bronze end plates. Dowels to assure perfect alignment complete the assembly. Compressed air enters and leaves through ports cut in the cylinder. The motor is designed so that any mechanic can disassemble and reassemble easily if repairs are necessary. The first test units were grease-lubricated and had neither air strainer nor lubricator. Since no vanes nor cylinders needed replacement in two years of service, it has been concluded that lubricators and strainers are not necessary and have not been specified on new equipment.



● The longer adjustment feature of Rooshors means fewer different sizes of shores to have on hand. Two sizes have full 6 ft. adjustment and the smaller size a 4 ft. adjustment . . . 8 ft. to 14 ft.; 7 ft. to 13 ft. and 5 ft. to 9 ft. Each Rooshor will handle more jobs. Wooden upper members permit ease in diagonal and horizontal bracing when required. Hairline adjustment with the exclusive Rooshor Lock . . . there are no pins or bolts to lose and no screw adjustments to become clogged. *You save time, labor and material every time you use Rooshors.*

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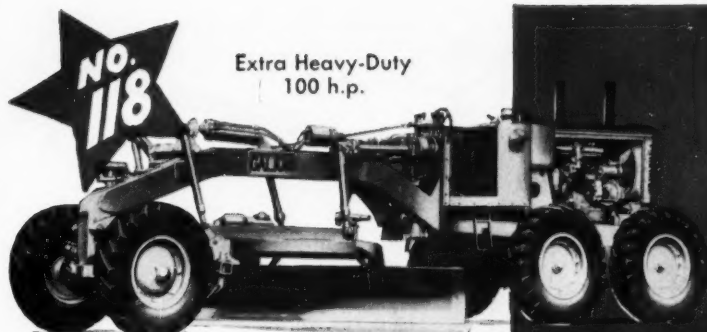


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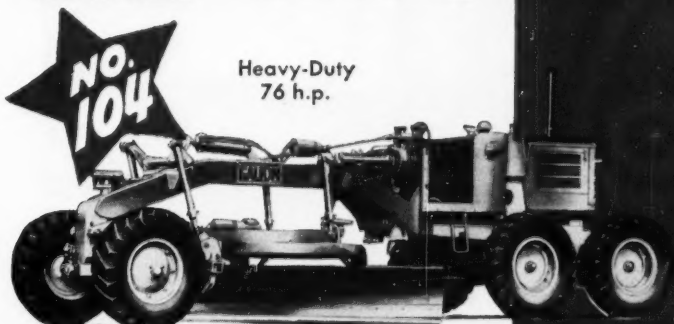
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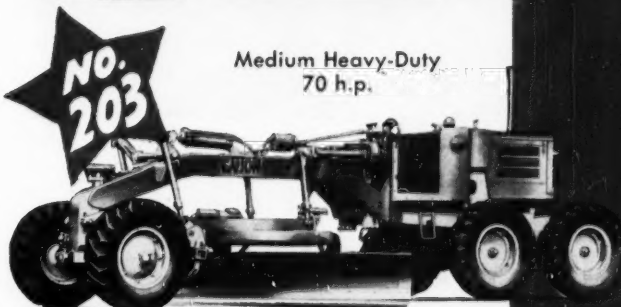
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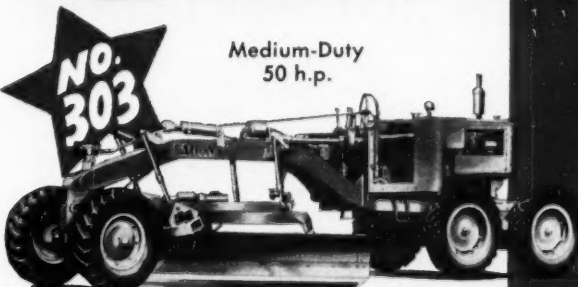
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Performance!

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COMPACT SITE LAYOUT features gantry-supported, pivoting loader to transfer aggregate from walled-in stockpiles to compartmented bin. Weigh batcher serves the charging skips of two mixers, concrete receiving hoppers dump into delivery trucks.

Batch Loader Pivots Over Stockpiles



PIVOT POST for 40-ft monorail ties in structurally with frame of batch bin, clears weighing area. Concrete bucket is being drawn up to dump into loading hopper above truck.

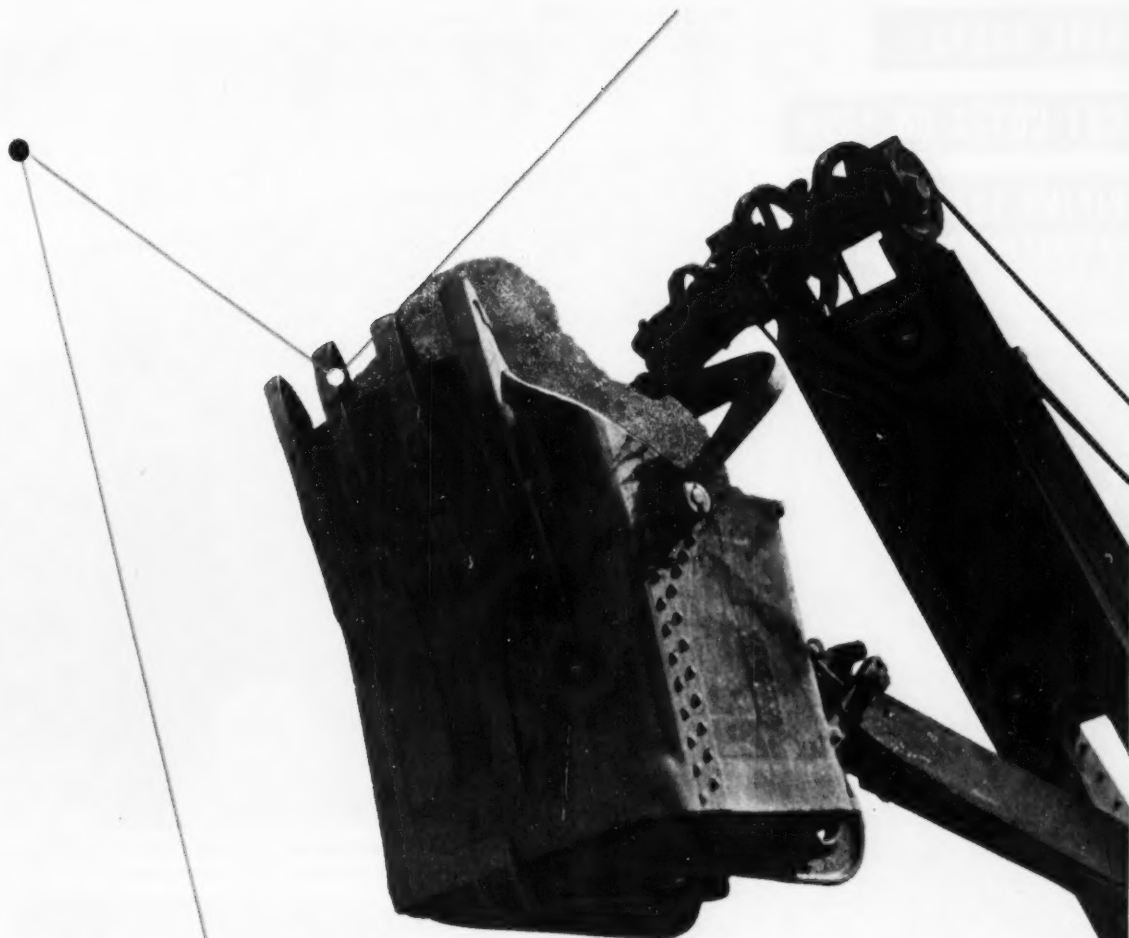
CONCRETE BATCH PLANT variations probably are as numerous as the jobs on which they are used. Now, from England, comes word of yet another unusual setup—the main feature being in the design and operation of its aggregates loader.

John Laing & Son, Ltd., London contractor, is building a housing development at Leicester which requires large quantities of concrete. The site is on level ground, and it is impossible to dump aggregates from trucks directly into batching bins without erecting an extensive ramp arrangement.

Aggregates are stockpiled on the ground. But the top of the hopper bin is approximately 15 ft above the ground, making it impossible to use a conventional type of front-end loader. For this job, Laing designed and built a special loader.

It consists of a 40-ft horizontal monorail pivoting at one end on a lattice-type steel kingpost. The

(Continued on page 136)



IT PAYS TO PROTECT INDUSTRIAL "MOLARS," TOO!



Here's proof: a single alloy application lengthens the life of manganese bucket teeth as much as six months! More than twenty Airco hardfacing alloys are at your disposal . . . to fight abrasion, impact, heat or corrosion *on any piece of machinery*. These Airco alloys can be applied to your fast-wearing equipment, tools and parts right on your own premises, by either arc or oxyacetylene flame. For a complete survey of your equipment and alloy recommendations, get in touch with your nearest Airco office!

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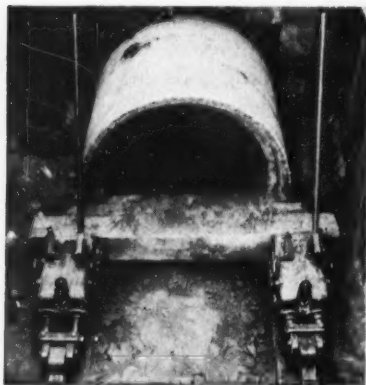
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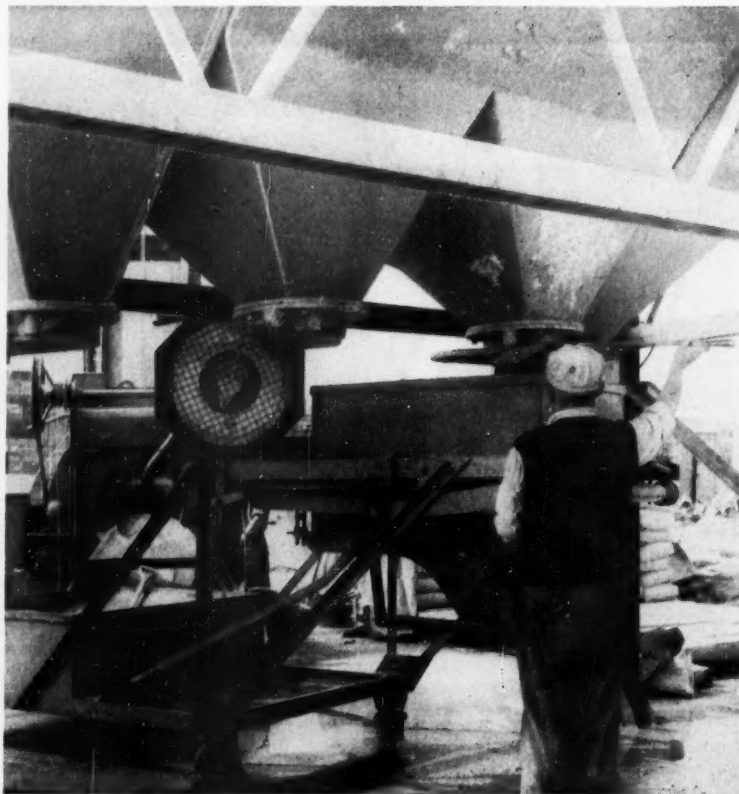


PUSH PIPE UNDER STREETS, TRACKS, walks, floors and other obstacles with a GREENLEE Hydraulic Pipe Pusher. One-man-operated, portable, simple to operate. No tearing up of pavement . . . eliminates extensive ditching, tunneling, back-filling, tamping, repaving. Cuts job time to a fraction. GREENLEE Hydraulic Pipe Pusher often pays for itself on first job. Two sizes—model shown above for pushing $\frac{3}{4}$ to 4" pipe. Larger unit, below, for pipe over 4", concrete sewer pipe and large drainage ducts. Power pump also available for extra ease and speed of operation.

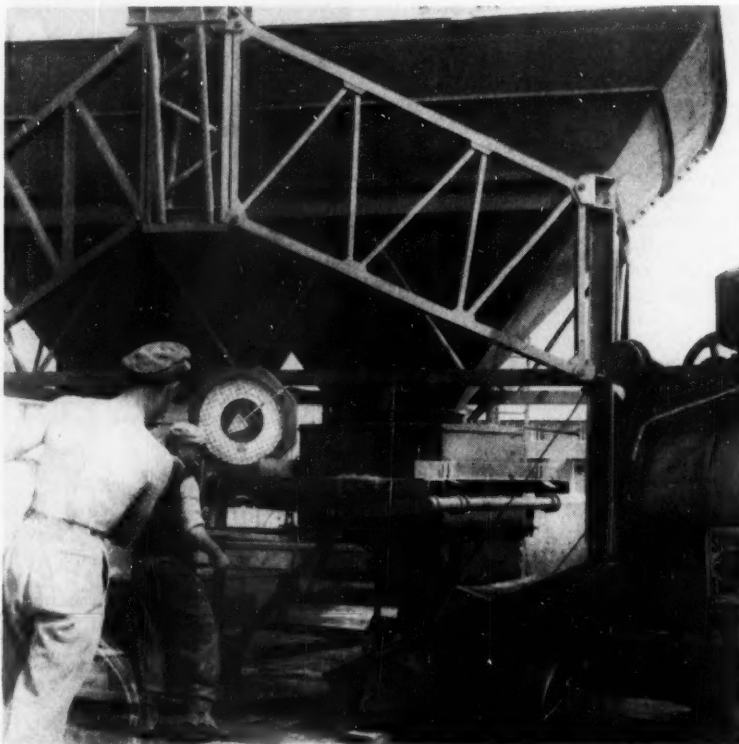


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PIVOTING LOADER . . . Continued from page 134



BATCH WEIGH BOX revolves around center post to serve each mixer alternately (one showing in background). Here it is taking on aggregate from a compartment.



AGGREGATES POUR from the weigh box into charging skip of one of the mixers as workman brings in a sack of cement from the left. Concrete is used on large housing project.

(Text continues on page 138)

GENERALS

GO IN — GET THE LOAD — CARRY IT OUT

and OVER THE HIGHWAY



"OFF-THE-ROAD"



"ON-THE-ROAD"

**FASTER!
EASIER!
At Less
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General D. T. L. with deep, sharp, angled cleats and sturdy, high shoulder lugs. Designed for maximum traction on soft surfaces—forward or backward.

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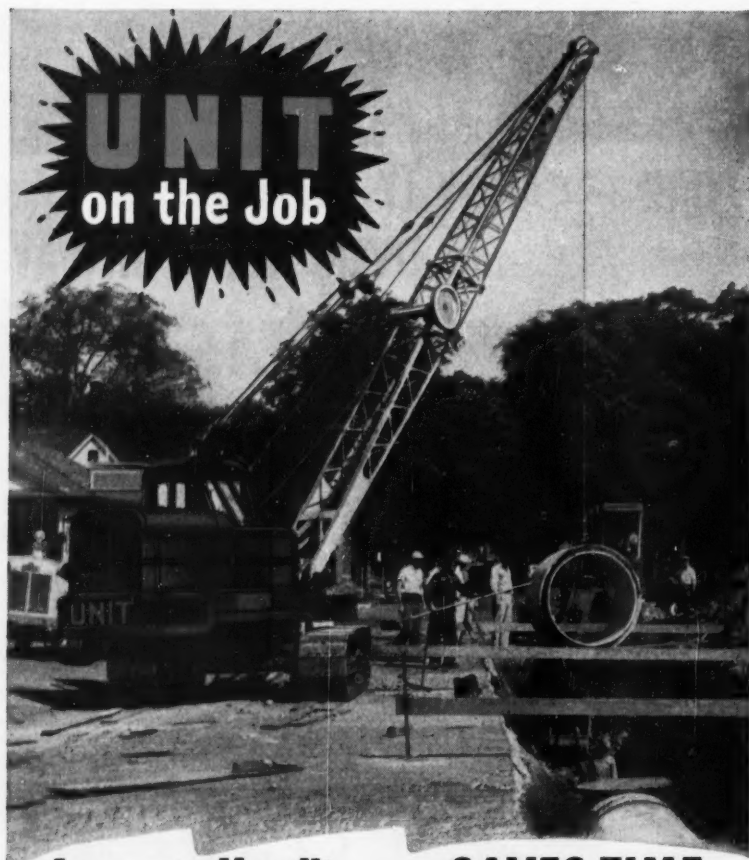
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Your GENERAL TIRE DEALER will KRAFT SYSTEM RECAP Worn Tires with the New GENERAL Truck Tire Tread of Your Choice



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CRAWLER OR MOBILE MODELS... GASOLINE OR DIESEL**



All Models Convertible to ALL Attachments!

PIVOTING LOADER...

Continued from p. 136

second point of support is a steel gantry frame carried on two double-flanged wheels that roll on a semicircular ground rail encircling the hopper bins.

Stability of the structure is achieved through the pivot and kingpost, carried on two bin frame members—high enough to clear the weighing area—which have been stiffened to take the added stresses. Foundations for the bin are proportioned to receive the complex reversible loads that occur when the loader is operating.

A 2-ton trolley hoist runs on the



ROOM WITH A VIEW is enjoyed by operator in cab on gantry leg. Large hand-wheel is for accurate alignment of bucket over narrow bins.

monorail at 90 fpm, has a lift speed of 60 fpm, and handles a 21-cu ft clamshell to transfer aggregates from the ground stockpiles to any one of the four compartments in the batch bin. Hoisting, traversing and gantry travel are powered by electric motors.

Aggregates are delivered by motor trucks to the stock heaps, which are inside adjoining walled-in areas laid out in an arc to parallel the semicircular travel rail used by the gantry.

The operator of the loader is stationed in a cab mounted on one leg of the gantry, high enough to give him a clear view of the stockpile area and into the top of the bin. Controls are interlocked, and there are travel limits in the interests of safety. In addition to the cab access ladder there is a

(Continued on page 140)



TRU-LAY Preformed WIRE ROPE

● For each use there is *one best* wire rope . . . one that will stand repeated loading, abrasion, crushing, or continuous bending, and be the best rope to buy.

To achieve this, there is a TRU-LAY Preformed Wire Rope made in a special construction for your equipment. This construction has the exactly right combination of strength, bending life, and resistance to wear and crushing that you need.

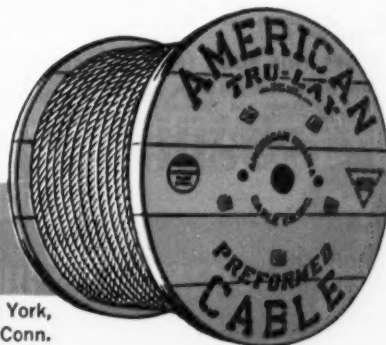
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Now—thoroughly reviewed

Causes and cures
of economic fluctuation
in the construction industry



Here is a book that amply meets today's need for a comprehensive study of the construction industry and its economic problems. Members of the many components of the industry, from producers of materials to real estate men and bankers, will get an encouraging picture from it. Besides describing the industry and how it operates, the authors present a wealth of data and analysis evidencing the real possibilities for stability for some time to come, and outlining steps toward achieving it.

STABILIZING CONSTRUCTION THE RECORD AND POTENTIAL

By Miles L. Colean
and Robinson Newcomb

A Research Study of the
Committee for Economic Development

327 pages, 6 x 9, 12 illustrations, \$6.00

The book relates construction to the economy as a whole, showing that the economy acts more upon it than it does on the economy. You are shown measures to achieve relative stability in times of general stability or minor difficulties, and special anticyclical measures for use in the face of serious decline.

The authors give you an authoritative analysis of the industry, its organization, methods, and environment. Then, against this background, they present sound and penetrating analyses of the industry's problems and potentials.

Especially interesting are the study of fluctuations in demand for various components as distinguished from the industry as a whole . . . the analysis of factors tending to keep construction costs up . . . material dispelling the idea of an 18-20 year construction cycle . . . cautions on public works . . . market prospects.

The book includes appendices giving the most rounded assembly of basic data anywhere available on industry.

"Must reading

A real treasure house to assist those leaders and laymen of the Construction Industry who are constantly striving to help this great segment of the American economy function most effectively for the national well being," says Norman P. Mason, Chairman of the Construction and Civic Development Committee, Chamber of Commerce of the U. S.

"Supplies a timely antidote

to the special pleading and piecemeal outlook which have aggravated the fluctuations and recurring emergencies in this strategic area of our economy. Points the way to balanced development in construction," says Dr. A. D. H. Kaplan, Senior Economist, The Brookings Institution, Washington, D. C.

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PIVOTING LOADER . . . Continued from page 138



SEMICIRCULAR TRACK RAIL supports gantry on its trips to the various stockpiles. Electric cable powering hoist and monorail trolley pays out and loops back on a slotted "curtain rod."

hinged door in the roof, with a ladder overhead to make hoist gear accessible for maintenance.

Laing's shop-built loader is welded throughout, except for convenient separation points, which are joined by bolts to make disassembly practical for transport to another site. A ballast "basket" is built into the base of the gantry support between the wheels, to meet the liberal wind-loading requirements specified in the British Standards for Cranes.

Batching and Mixing

Ingenuity on this batch-plant layout is not limited to the loader. The layout supplies aggregates to two concrete mixers through a swiveling weigh box that serves each mixer. The weigh box is supported on a steel-frame extension which revolves in a full circle around a center post. Its weight is carried on four steel wheels rolling on a circular track.

The batch box can be swung around to receive aggregate from any of the four overhead compartments. Then it can be swung in either direction to discharge its contents into one of the mixer charging skips. Cement is brought to the site in sacks and dumped into the skips as needed.

Each mixer discharges its batch into a concrete bucket that posi-



CONCRETE FLOWS from automatically tripped hoisting bucket through loading hopper into waiting truck below.

tions directly under the discharge chute. The loaded bucket is drawn up two inclined rails over a receiving hopper, where an automatic tripper tilts the bucket to discharge its contents into the hopper below. End-dump trucks are driven under the hopper, receive their cargoes of fresh concrete and deliver the product to the building under construction.

John Laing & Son have a long and varied experience in the construction of concrete structures (see also CM&E Aug. 1952, p. 58).



D-C FIELD WELDING



RUN A-C POWER TOOLS



TAKE IT ANYWHERE

Look what you can do with the New Westinghouse Engine-Driven D-C Welder

Here is a lightweight, 200-ampere, gas engine-driven welder with up to 3-kw stand-by power—all in the same unit. By simply plugging into convenient receptacles on the a-c power panel, the operator may obtain power for drills, grinders, pumps, lights and other electrical equipment.

LIGHT—The auxiliary generator power in this machine is gained at no penalty in weight. The 1,150 pounds represent the lightest possible engine-driven welder with stand-by power that you can buy today. The welder is rated at 200 amperes, full 60-percent duty cycle, NEMA rated, with a maximum of 250 amperes.

COMPACT—This self-contained unit is only 39½ inches from the base plane to the top of the lifting eye. Its over-all length is 62¾ inches. The welding generator is self-excited and close coupled to the driving engine.

VERSATILE—This welder is valuable in construction and maintenance operations on gas and petroleum pipelines, road-building projects, railroads—in fact at any remote site where there is no access to ordinary power supply. In disaster areas, this welder can power vital electrical equipment until normal service has been restored. The standard unit is skid mounted for truck transport or may be mounted on a high-speed, pneumatic-tired trailer.

For more information contact your nearest Westinghouse representative, or write to the Westinghouse Electric Corporation, Welding Division, P. O. Box 868, Pittsburgh 30, Penna. Ask for Booklet B-5455.

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by LEON B. KROMER, JR.

Stabilization Continues Although...

THE STABILIZATION PROGRAM may have sagged when all the industry members and chairman of the Wage Stabilization Board resigned. But don't be misled into ignoring stabilization reg-

ulations when granting wage increases, bonuses, etc. The Board's functions have been taken over by the Wage Stabilization Committee made up of the Board's public members and Mike DiSalle, new Economic Stabilizer. This committee immediately adopted all policies, rules, regulations and or-

ders of the WSB. This action was intended to provide continuity to the stabilization program and process some of the 12,000 case backlog until the Board can operate again.

Remember also that the Construction Industry Stabilization Commission continues; its industry members have not resigned and, as of now, do not intend to. It is still issuing decisions and amendments to its regulations (see below).

And Enforcement Continues As...

The National Enforcement Commission continues to process cases to determine tax disallowance penalties for violators. Several contractors are involved in cases referred to the Commission from Regional Enforcement Commissions with possible tax disallowances totaling thousands of dollars. In one case settled recently the tax disallowance assessed—\$75,000—represents the largest penalty under the enforcement program. It was against two family-owned companies that also were required to reduce wages of several trades to legal ceiling rates; a roll-back of up to \$.45 per hr.

The Salary Stabilization Board has also stepped up its enforcement investigations. It has more than 2,000 cases under study, several hundred of them in the New York-Jersey area. Three New York firms face possible tax disallowances of more than \$111,000.

CISC Amends Its Regulations So That...

If you have a few specially qualified employees to whom you always paid a fixed hourly premium above the approved area rate you can continue this practice, provided that:

1. Your payroll records for the period April 1-July 31, 1950 clearly show that you paid these few employees (or ones they replaced)

(Continued on page 144)



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NIMBLE AS A TENNIS STAR the Gar-Bro Power-cart starts and stops fast... can reverse direction instantly... turns within a radius of four feet and is practical on a five-foot runway.

★ Here's the power, speed and capacity to move 14 cu. ft. or a ton of material up steep grades or over rough, uneven ground at speeds up to 12 mph.

★ Positive control enables the operator to discharge a spoonful or a full load.

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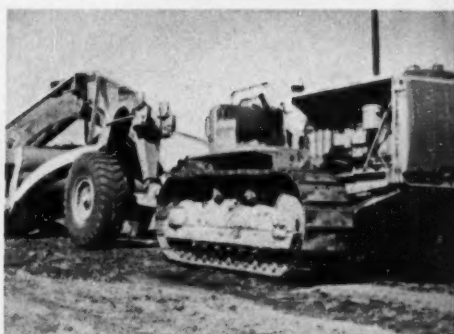
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STANOLUBE HD-M

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Motor Oil

The R. B. Potashnick Construction Company, Cape Girardeau, Missouri, is adding further to its great reputation for completing the tough jobs ahead of schedule. This contractor is now working on a vital flood control project which will provide a by-pass for the Arkansas River around Wichita, Kansas. The operating "know-how" of this company has helped move work well ahead of schedule. Important to efficient operation has been the employment of an outstanding safety program and the use of good equipment, powered and protected by high quality petroleum products.

Mr. W. H. Jordan, Superintendent, is shown above (right) with Mr. W. G. Ingraham, Automotive Engineer of Standard's Wichita office. Mr. Jordan knows how to get the most out of his equipment. He has this to say about his experience with STANOLUBE HD-M, Standard's new and better motor oil:

"We push our equipment hard all the time, and it must be able to take punishment. STANOLUBE HD-M has protected our engines under these conditions to the extent that we have not had an engine failure caused by faulty lubrication. In addition, our engines have stayed clean which has reduced our maintenance costs. Trouble-free operation of our equipment, together with a successful safety program, has helped us keep 20% ahead of schedule on this Wichita, Kansas, flood control job."

Make the experience of the R. B. Potashnick Company your basis for trying STANOLUBE HD-M Motor Oil. In the Midwest, you'll find a Standard Oil Automotive Engineer located near you. To get his help, phone your local Standard Oil office. Or write, Standard Oil Company, 910 South Michigan Avenue, Chicago 80, Illinois.

STANDARD OIL COMPANY
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CUT TIME between jobs... get extra production from slow machines with MILLER Tilt-Top!



You'll find MILLER Tilt-Top the handiest trailer for cutting between job travel time on your slow machines. Heavy units are loaded by one man in less than two minutes. Operator drives unit on platform—it tilts, locks... and he's on his way with no lost motion.

MILLER Tilt-Top saves even more time than other more cumbersome trailers with its better maneuverability, and easier backing. Best of all, MILLER'S exclusive mass production of Tilt-Top trailers cuts original cost for you. Get this extra help... extra production now—see your MILLER dealer today!

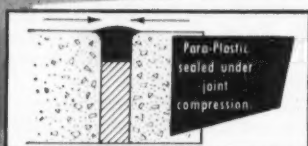
MILLER  **research engineers**
Trade mark reg. Dept. C-1, 457 So. 92nd Street, Milwaukee 14, Wis.

MILLER "B" 10 ton shown above loading D-4 tractor

**handier
easy-to-back
priced right**

Model "B" 10 ton \$1175
Optional equipment (priced extra)
16' long platform (8'x14' standard),
hydraulic tilt control, 2 speed
hand winch and electric brakes.

Servicised HOT POURED Para-Plastic* FOR POSITIVE SEALING OF ALL JOINTS



Para-Plastic prevents infiltration of water or other foreign substances under any expansion or contraction conditions of monolithic concrete.



Write for complete information on Para-Plastic for sealing any joint.

- MAINTAINS BOND FROM 0° TO 180° F
- RESILIENT, ADHESIVE, ELASTIC
- ADHERES TO CONCRETE, STEEL, METALS, WOOD AND TILE

NOW! Para-Plastic JF

New type Para-Plastic JF for airfield and airport construction. Resists dissolution by Jet Fuel spillage or leaks. All other Para-Plastic features included. Ask for details.

*Para-Plastic is one of the many patented products developed for the Construction Industry by Servicised Products Corp.



SERVICISED PRODUCTS CORP.
6051 W. 65th STREET • CHICAGO 38, ILLINOIS

LABOR... Continued from p. 142

the same fixed hourly premium above the then prevailing rate for their job classification;

2. You have continued to pay these employees the same premium above the prevailing rate since, except when prevented by stabilization regulations, and

3. Such premiums have been paid to individual employees for special qualifications or skills.

Note that this amendment applies to individual employees, not to groups of employees.

If you started business after the April-July 1950 period, or don't meet the above three conditions and want to pay a premium above the area rate, ask CISC for approval before paying.

Extension of CISC Jurisdiction

If you employ riggers to move heavy machinery and equipment from one shop location to another, their rates of pay are subject to CISC regulations. This applies even though you are not actually engaged in construction or alteration of buildings.

Under another amendment to Wage Stabilization Regulation No. 12 (which established CISC and defined its jurisdiction), if you have an off-site shop for fabrication and repair of materials, the wages of shop employees are subject to CISC controls if:

1. Such employees are employed by a contractor and some of them work at the construction site;

2. They perform the same skills as laborers and mechanics in the construction industry, and

3. Area practice prior to June 24, 1950 indicated a definite relationship between their rates and the rates paid mechanics of the same craft in the construction industry.

This amendment is intended to eliminate wage problems of electrical, plumbing and other contractors who do a certain amount of shop fabricating before working at the site of construction.

Point to remember: If the rates paid your shop employees bear no relationship to rates for similar crafts employed on construction

(Continued on page 146)

A Virginia highway's answer to modern, heavy traffic



Large photo shows the Texaco Sand Asphalt wearing surface being laid on Virginia Route 147 near Richmond. Other photo is a close-up of the Texaco Asphalt Concrete foundation. The Atlantic Bitulithic Company of Richmond did the work.

-top-to-bottom flexibility

Virginia's Route 147 is a primary highway, used by traffic on US-1 and US-60 to by-pass the city of Richmond. A section of this route now under construction is noteworthy because of one feature, in particular. From surface to subgrade, it is 100 percent flexible in character. A 1½ inch Texaco Sand Asphalt wearing surface is being laid on a 5-inch Texaco Asphalt Concrete foundation, under which there is a 6-inch sub-base of clay-gravel.

Completely flexible construction, such as that employed on this Virginia highway, possesses advantages which pay off in durability and low maintenance cost. A highway of this type absorbs the impact of heaviest traffic, greatly reducing the possibility of damage due to this cause. Because it is

flexible for its full depth, the highway structure maintains complete contact with the supporting subgrade. Unevenness in the surface due to settlement of the subgrade can be corrected quickly and at low cost, with a minimum of inconvenience to traffic.

Road builders have solved their highway and street construction problems successfully with the aid of Texaco Asphalt products for almost half a century. Texaco Asphalt Cements, Cutback Asphalts and Slow-Curing Asphaltic Oils include products for every purpose, from heavy-duty paving to dust-laying. Two helpful booklets which discuss all of these types can be obtained by road builders without cost or obligation by writing our nearest office.

THE TEXAS COMPANY, Asphalt Sales Dept., 135 E. 42nd Street, New York City 17
Boston 16 • Chicago 4 • Denver 1 • Houston 1 • Jacksonville 2 • Minneapolis 3 • Philadelphia 2 • Richmond 19



TEXACO ASPHALT



How we got "out of the woods"...

after fire turned our \$4,000 diesel into \$25 worth of junk

(A true story based on Company File #18217)

Our camp is five and a half miles from town, and when the watchman saw flames breaking out of the power shed, he tried to fight the fire himself.

Meanwhile, fire-fighting equipment from the village and township arrived. But the fire was already out

of control and our \$4,000 diesel power unit was practically melted down. Best scrap offer anyone made was \$25.

But the Hartford Fire Insurance Company paid us \$4,000 in full, under our Contractors' Equipment policy.

The farther your operations are from fire and police protection, the more you need the broad coverage offered by our Contractors' Equipment policy.

This policy covers your equipment in storage, in transit, and while in use. And protects you against loss by fire, theft, explosion, as well as against damage done by landslide, collision, overturn, windstorm and many other hazards.

Ask your Hartford Fire Insurance Agent, or your insurance broker, to quote rates and details of coverage offered you by our Contractors' Equipment policy. Or write us. You'll be surprised at its broad protection and moderate cost.

Year in and year out you'll do well with the

Hartford



Hartford Fire Insurance Company • Hartford Accident and Indemnity Company
Hartford Live Stock Insurance Company • Hartford 15, Connecticut

LABOR . . . Continued from p. 144

work, the wages of the shopmen are under WSB jurisdiction.

Under another amendment to Regulation 12 if you, by contract, alter, repair, remodel, paint and generally maintain buildings and facilities and have paid your employees since prior to June 24, 1950 at rates prevailing for similar crafts on construction you may continue this practice. The rates paid maintenance employees, under these conditions, are subject to CISC regulations.

Changes in Taft-Hartley?

With a new administration taking over this month and a Secretary of Labor who formerly headed a building trades international union, there is a good chance that the Taft-Hartley Act will be amended. Contractors who have had to make back wage payments under National Labor Relations Board rulings are hopeful that something like the Taft-Humphreys amendment (CM&E March 1952, p 101) will pass both houses of Congress.

As of the present, contractors cannot legally negotiate any kind of an agreement with a building trades union that contains a union security clause. As a result, many contractors, bound by such agreements, get into trouble when an employee is discharged, either for not becoming a member of the appropriate building trades union, or at the request of the union's business agent.

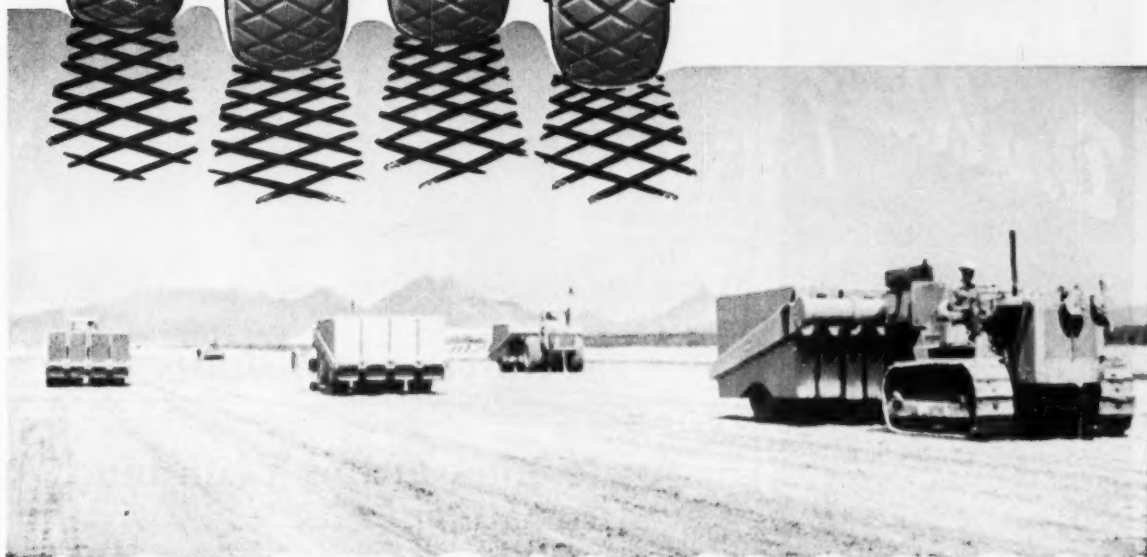
The Taft-Humphreys amendment would have permitted contractors and unions to negotiate collective agreements before a job started. It also would have authorized a union shop after seven days of employment. After passing the Senate, the amendment died at the end of the session in the House Labor Committee. There is now hope that the amendment, or a similar one, will be introduced and pass the new session of Congress. It will eliminate many NLRB cases involving back-wage payments.

Send Us Your Questions

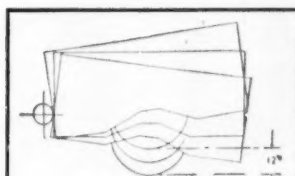
• Lee Kromer, who writes these columns, is anxious to be as helpful as possible. Why not send him your particular labor problem? Or ask him to interpret a baffling regulation. Send your letter to Lee in care of *Construction Methods and Equipment*, 330 West 42nd St., New York 36, N. Y.

compact heavier lifts

with fewer passes



Southwest COMPACTION ROLLER



Greater Oscillation

Each wheel of the Southwest Compaction Roller is mounted in an independent weight-box unit. Hinge point of wheel is at extreme rear of its own weight-box. Closely spaced wheels give maximum compaction with as much as 12" variance in height. Offers oscillating freedom and greater compaction on uneven ground.

ON THE BIG JOBS use the Southwest Compaction Roller to keep pace with speedy, 24-hour job schedules and bigger earthmoving equipment. It compacts heavier lifts with fewer passes. Weight-box units oscillate up and down independently to provide a constant compaction weight on each tire regardless of ground contours. There is no bridging, no shifting of load.

The Southwest Roller has flexibility to suit varying job requirements. Weight-boxes may be filled with wet or dry sand, earth, scrap or other materials. Sectionalized hauling yoke permits use of any combination from 3 to 6 weight-box units. Sizes and capacities range from 10 to 200 tons, suitable for light, medium or heavy duty compacting of earth.

Type Soil	Symbol	No. of Single Passes	% Moist	FIELD		OPTIMUM		
				Dry Density Lbs. / Ft. 3		% Moist Sieve	Dry Density Lbs. / Ft. 3	Ratio Don.-Opt. — Pass #4
				Actual	Corrected			
Silly Sand	SM	6	7.3	128.0		8.0	133.6	96.0
Sandy Clay	CL	6	10.2	110.0		15.3	116.2	95.5
Sandy Clay	CL	6	14.3	114.0		15.3	116.2	98.0
Sandy Silt	ML	6	14.6	115.0		14.2	120.8	92.0
Clayey Sand	SC	6	9.2	125.2		10.2	128.3	97.8
Silt	ML	6	6.6	119.0		9.5	125.0	95.0
D.G.	SW	6	8.7	126.7		9.2	132.0	96.0
D.G.	SW	6	5.2	129.0		7.8	135.0	96.0
Straight Clay	CL	6	6.3	122.8		10.3	127.1	96.6
Pit Run	GW	6	4.8	133.5	126.5	7.7	134.5	95.0

The above data on unit weight of soil samples has been taken from average compacted fills placed in lifts from six to twelve inches as specified. The unit weight per pneumatic wheel load being 25,000 lbs.

WRITE TODAY for illustrated folder which gives complete data and specifications.



CONSTRUCTION MACHINERY DIVISION

Southwest Welding & Manufacturing Co.

Alhambra, California

HAULING SCOOPS BULLDOZERS LOADERS BOTTOM DUMP WAGONS RIPPER TAMPER SCRAPERS TREE DOZERS

EQUIP NOW
EASIER-
FASTER
BLAST HOLE
Drilling

McCARTHY
MOBILE-
MOUNT
VERTICAL
DRILLS



• You're set to drill all ordinary rock formations when you're equipped with mobile-mounted McCarthy Vertical Drills. These heavy, rugged McCarthy units are compactly designed for truck, half-track, cat or "Jumbo" mountings. They're easy to move about, easy to set up. They're equipped with finger-tip hydraulic controls; your choice of electric, diesel or gasoline power units.

Recently, on one difficult job, workers using McCarthy equipment drilled an 8-inch hole 100 feet deep in only 40 minutes!

Write today for full facts about McCarthy Drills. See for yourself how you save valuable time on the job by using a McCarthy—the toughest, fastest, most efficient unit ever made.

DRILLING
EQUIPMENT
SINCE 1901

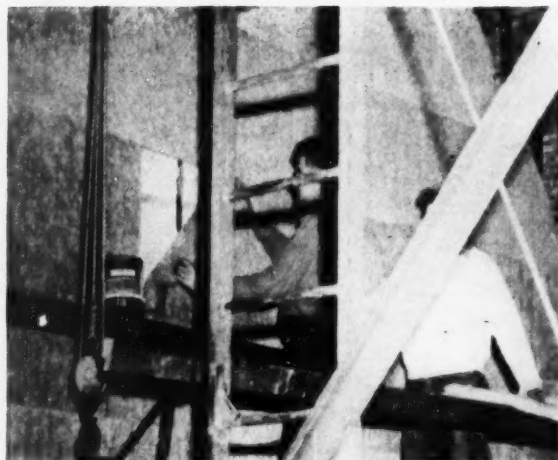


THE SALEM TOOL CO.

765 So. Ellsworth Ave.
 Salem, Ohio, U. S. A.

Pasting the Insulation Saves Time

THESE TWO MEN are insulating the interior of a church in Chicago. The only rigging they used was a painters' swing scaffold, and tools required were a knife to cut the 1 1/2-in. thick rolls of insulation, a measuring rule and a pot of linoleum paste to hold the material to the wall. The fast-working stuff is Ultralite, a glass-fiber insulation made by Gustin-Bacon Mfg. Co., Kansas City.



The History of Construction

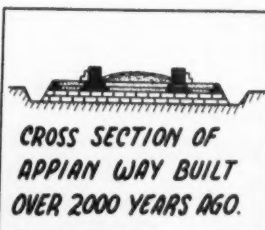
As It Was in the Beginning

ROMANS
MASTER
ROAD
BUILDERS



THE ROMANS BUILT THEIR ROADS & BRIDGES TO LAST.

BRIDGES THEY BUILT WERE	IN A.D. 105, IS STILL IN USE. IT
MARVELS OF ENGINEERING.	IS BUILT OF GRANITE BLOCKS
ONE BRIDGE, IN SPAIN, BUILT	SET WITHOUT MORTAR AND IS
NEARLY 200 FT. HIGH—TWO OF ITS	
SIX ARCHES MEASURE 90 FEET	

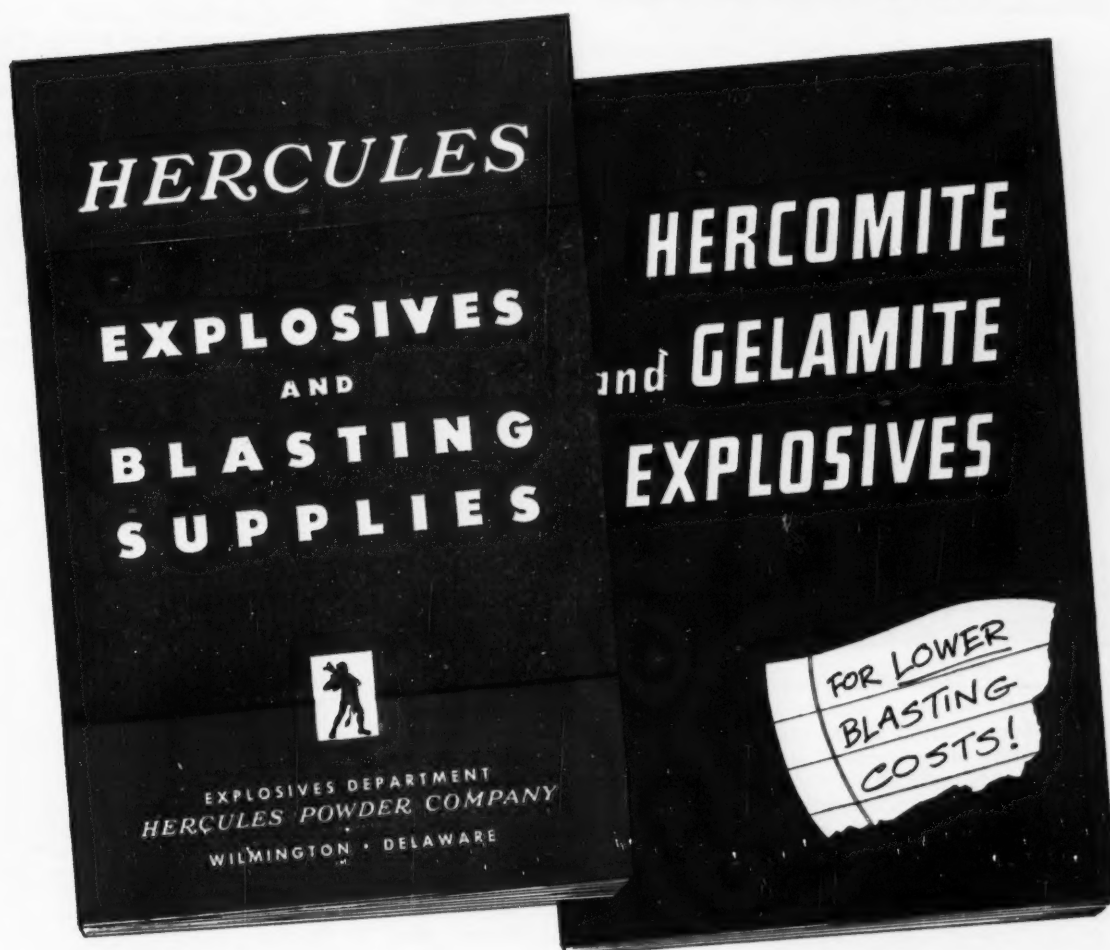


CROSS SECTION OF
APPIAN WAY BUILT
OVER 2000 YEARS AGO.

*by Don Burke &
 Doris Harvey*

THE ROMAN METHOD OF ROAD BUILDING WAS TO EXCAVATE TO HARD PAN OR SOLID ROCK. LAYERS OF RUBBLE & CONCRETE PACKING CARRIED A SURFACE OF CLOSELY FITTED PAVING BLOCKS. EVEN CURBS, SHOULDERS & DRAINAGE DITCHES WERE ADDED. IN "SURVEYING" A ROAD SITE, THE ROMANS MERELY PICKED OUT A LANDMARK ON THE HORIZON AND BEGAN CONSTRUCTION REGARDLESS OF TOPOGRAPHY.

Explosives Up-To-Date



New Booklets Just Off The Press

Here's the latest information on Hercules' complete line of explosives and blasting supplies . . . a total of 80 pages of valuable data on these products for mining, quarrying, construction, and seismic exploration. If you use explosives in any way, these two new booklets are a "must" for your engineering and purchasing departments. Write for free copies to:

Explosives Department

HERCULES POWDER COMPANY

INCORPORATED

974 King Street, Wilmington 99, Delaware



AR53-1

Builds \$500,000 Business in 5 years with Bantam Method



One of Eisenhart's Bantams moves in to install 4 15' dia. septic tanks for new school at Mid-dletown, Md. Bantam ramped down 3', then cut 12' deeper to complete excavation in 2 days.

M. S. Eisenhart, York, Pa., contractor, who controls 3 companies doing a half million dollars gross business this year, credits much of his rapid success to the mobility, big work capacity and low maintenance cost of Schield Bantam equipment.

Started with \$45

Eisenhart launched a small septic tank contracting business in 1947, with \$45 and 2 truck-mounted Back Hoes of another make. In 1950, he traded his original hoes for 2 Bantams — and business started humming!

Now owns 9 Bantams

Today Eisenhart owns 3 companies . . . 9 Bantam Back Hoes . . . and operates in 5 states, plus the District of Columbia. Major Bantam application is excavating, placing and back-filling septic tanks. However, these versatile, truck-mounted

machines also excavate basements, water and gas lines, drain beds, etc. — for private homes, schools, motels, hospitals and industrial plants.

80% less maintenance

Eisenhart reports that if his oldest Bantam (purchased in 1950) had dug all its ditches in one direction, "it would now be going through California." Yet the only repairs necessary have been new clutch and brake linings. In his own words, "Bantam maintenance is 80 to 90% less than the other truck-mounted hoes I started with."

Investigate today!

You, too, can bid lower, handle more jobs, make more profit, with low-cost Bantam cranes and excavators. Write today for literature and free demonstration. Schield Bantam Co., 221 Park St., Waverly, Iowa.

SB-H-19



SCHIELD BANTAM

Cranes • Excavators

The **LOW-COST** machine with the **BIG** earning range

SALES AND

★ SERVICE ★

News of manufacturers' activities designed to assist the reader in the purchase of machinery, equipment and materials and help him obtain quick service on parts and maintenance.

Distributor Appointments

Automatic Devices, Inc.: The following new distributors for the Adjustomatic lines have been appointed—Bauer Industrial Sales, Inc., 683 Lincoln, Worthington, Columbus, Ohio; Bowles & Edens Supply Co., 603 2nd Ave., Dallas, Texas.; Chapman Machinery Co., 210 - 13th St., Tampa, Fla.; Gierke-Robinson Co., 210 E. River St., Davenport, Iowa; Highway Equipment & Supply Co., 21st & N. Lincoln, Neb.; W. P. Howle Co., 2705 Grant, Wichita Falls, Tex.; Montana Powder & Equipment Co., 12 E. Lawrence, Helena, Neb.; Neff-Thomas Machinery Co., 1920 N.W. Miami Court, Miami, Fla.; Richards Equipment Co., 910 Franklin, Waco, Tex.; Texas Contractors Supply Co., 2037 E. Lancaster, Fort Worth, Tex.

Hyster Co.: Appointment of Machine Tools, Inc., Des Moines, as exclusive dealer of Hyster equipment in a large part of Iowa has been announced.

Joy Mfg. Co.: Announcement has been made of the appointment of three distributors to handle the entire line of Joy construction equipment—Frantz Tractor Co., New York, N. Y. and Hempstead, N. Y.; East Coast Equipment Co., Mountain-side, N. J.; Southern Gateway Co., Cincinnati, Ohio.

Cleco Div., Reed Roller Bit Co.: Has announced the appointment of Grant & Co., 2144 E. 7th St., Los Angeles, Calif.; H. N. Crowder, Jr., Co., 446 Union St., Allentown, Pa.; and Ponsford Equipment Co., 408 Bassett Tower, El Paso, Tex., as distributors for Cleco products in their areas.

Bucyrus-Erie Co.: The E. C. Ray Machinery Co., 2001 E. Texas Ave., Shreveport, La., was recently appointed distributor for the Bucyrus-Erie ¾- to 4-yd gasoline, diesel and single-motor electric convertible excavators, dragline buckets, Hydrocranes and Hydrohoes.

Alloy Rods Co.: The addition of seven distributors for the complete line of alloy arc welding electrodes was announced. The new distributors are—Altoona Auto Accessories Co., Altoona, Pa.; Mississippi Supply Co., Chicago, Ill.; Central Welding Equipment Co., Fort Smith, Ark.;

Bailey Welding Supply Co., Houston, Tex.; Randall-Graw Co., Inc., La-Crosse, Wis.; R. & G. Auto Supply Co., Valley City, N.D.; and Worland Oxygen Co., Worland, Wyo.

On the Sales Front

Pittsburgh Corning Corp.: The appointment of E. H. Martin, Jr., as manager of Foamglas Low Temperature Insulation Sales has been announced.

Insul-Mastic Corp. of America: John C. Tyler has been named southern regional manager, with headquarters in the company's Houston office.

U. S. Expansion Bolt Co.: Announces the appointment of H. W. Buchholz as midwestern representative. His territory will include Chicago, Northern Illinois, Wisconsin, Upper Michigan, Minnesota, Iowa, Nebraska and North and South Dakota.

Marlow Pumps: Announces the appointment of J. B. Diepenbrock, formerly West Coast district representative, as manager of a new marketing research department. He will make his headquarters at the company's main office in Ridgewood, N. J. and coordinate research, engineering and sales data gathered from markets and industries throughout the world.

Clayton Mfg. Co.: Appointment of H. M. Kirkby as sales promotion manager of the Steam Generator Division has been announced. Mr. Kirkby, who will make his headquarters at 638 N. Albany Ave., Chicago 12, will maintain continuous contact with Clayton distributors and field service representatives.

H. Wenzel Tent & Duck Co.: Raymond Kratky has been appointed general sales manager.

St. Paul Hydraulic Hoist Div., Gar Wood Industries: Leo M. Brown, formerly assistant sales manager, has been appointed sales manager.

Warner & Swasey Co.: Herman A. Kraus has been placed in charge of Gradall sales for the Southwest. Kraus, with headquarters in Houston, Tex., will cover Texas, New Mexico, Oklahoma, Arkansas and Louisiana. Stanley Adams has been named service representative for the area, and will also headquarter in Houston. Don Dawley has been appointed service representative for the New England area with headquarters in East Orange, N. J. Willis C. Burton has been named service representative for the Middle Atlantic region, serving the area from southern New Jersey to North Carolina. He will be located in Upper Darby, Pa. Frederick A. Strine has been placed

in charge of Gradall sales for the midwest area covering Illinois, Wisconsin, Minnesota, Missouri, the Dakotas, Wyoming and Colorado, as well as Iowa, Kansas and Nebraska. Harold R. Carrol is service representative for the area.

The General Tire & Rubber Co.: Earl H. Schaub, formerly Boston division sales manager, has been promoted to manager, new distribution. He will make his headquarters in Akron.

Crucible Steel Co. of America: Appointment of George W. Stamm to the newly created post of assistant to the vice president in charge of sales has been announced. Robert C. Kuhn has been promoted to manager of the Cleveland sales branch, succeeding Mr. Stamm.

In the Main Office

Borg-Warner Corp.: Appointment of Arch A. Warner as president and general manager of the Mechanics Universal Joint Division has been announced. Harry L. Emerson will become president and general manager of the Rockford Clutch Division, the position formerly held by Mr. Warner. **G. L. Christianson** has been appointed executive vice-president of Rockford Clutch.

(Continued on page 154)

meeting
the need
for extra
width
with the

JAHN MODEL 410 WIDE PLATFORM TRAILER

The Jahn 410 Trailer is our answer to your problem of hauling extra wide equipment. Here is 8-feet of platform width to safely carry rolling stock from job-to-job.

The platform has been designed for easy loading with the rear half of the trailer sloped to a gradual incline . . . no more time consuming difficulties in getting your equipment aboard outmoded and unsafe trailers. The Jahn 410 is quick, safe and sure from loading to unloading. You owe it to yourself to know this unit better, so fill out the coupon and mail it today!

THERE'S A JAHN TRAILER FOR EVERY HAULING NEED



Tandem Axle Trailers

Tandem Axle Tilt Trailers

Single Axle Trailers



PRESSED STEEL CAR COMPANY, INC.
Jahn Trailer Division
6 N. Michigan Ave., Chicago 2, Ill.
Dept. CM&E



Dear Sir:

Send me literature on the Jahn 410 Wide Platform or any others I have checked.

☐ Tilt trailers ☐ Semi-trailers, Capacity _____

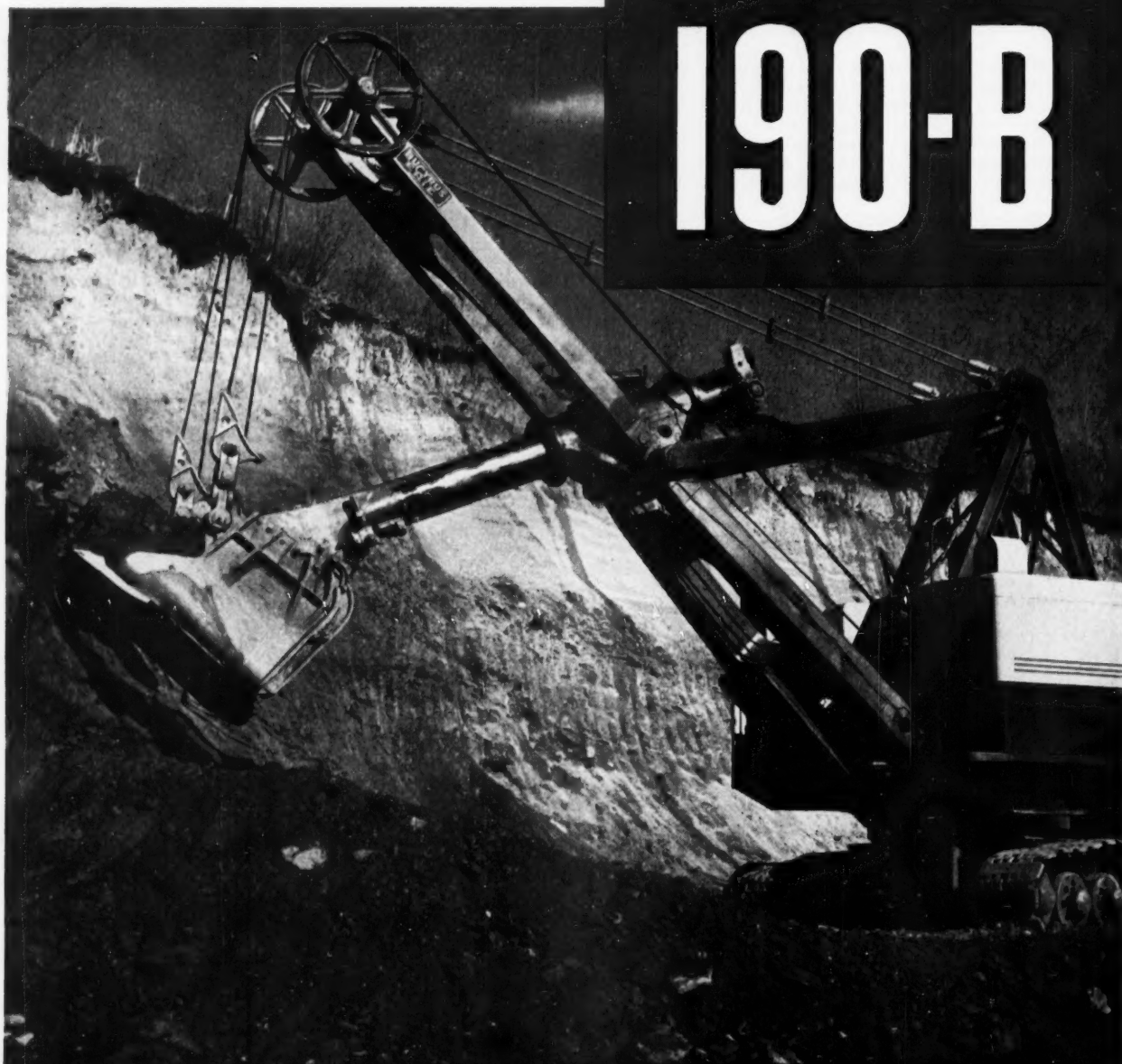
Name _____

Address _____

City _____ State _____

**BUCYRUS
ERIE**


8-yard
190-B



BUCYRUS-ERIE COMPANY

ANOTHER SMOOTH, FAST, BIG OUTPUT SHOVEL

for mines and quarries



The new 190-B follows the tradition of Bucyrus-Erie leadership in producing high quality excavators capable of delivering consistently big output at lowest possible cost per cubic yard. This 8-cubic yard shovel and dragline offers you many outstanding features — features that add up to greater capacity, higher output, and faster, smoother, more economical operation. Among these outstanding features are:

EXCLUSIVE TWO-SECTION BOOM

reduces shovel front-end weight, increases swing speed and payload capacity, yet provides ample strength for tough digging.

POWERFUL, MAIN MACHINERY

designed for double twin hoist, delivers power surely, smoothly, efficiently.

LARGER, STRONGER MOUNTING

provides ample strength for heavy duty and protective features for minimizing wear.

The 190-B has full Ward Leonard improved rotating control, is readily convertible to dragline service, and has numerous other outstanding features to meet the production demands of your toughest jobs.

FIGURE

SOUTH MILWAUKEE, WISCONSIN

Ever wonder why you never see a scowling, fagged operator on the Baker, A-C team? Here's why:

They just plain love that "doze-in-your-armchair" ease of control; that positive hold without throttle jockeying; that fraction-of-an-inch accuracy . . . that quick, direct lift; that positive down-pressure which puts almost all the tractor weight on the cutting edge; and the "roll-action" of the blade which leaves more tractor power for push. Because "Easy DOZE It!"

That's why you see the Baker, A-C team more and more wherever dirt has to be moved fast and efficiently. When operators prefer it, you can count on it being the best money-maker.

Specify Baker Bulldozers, Gradebuilders or Root Rippers for your new A-C Tractors . . . Baker makes engine-mounted hydraulic control models and cable-control models for the entire line of Allis-Chalmers crawlers. See your

Baker, A-C Dealer. THE BAKER MANUFACTURING COMPANY, Springfield, Illinois.



P.S.: Baker is the PIONEER and the SPECIALIST in bulldozers

SALES AND SERVICE . . .

Continued from page 151

Koehring Co.: John W. Poulter has been appointed chief engineer for the company. In his new post, Poulter succeeds E. O. Martinson who, earlier this year, was named vice-president in charge of engineering for Koehring and its subsidiaries.

Chicago Pneumatic Tool Co.: Guy J. Coffey has been elected president. Thomas P. Harris and James F. Huvane were elected vice-presidents; Thomas F. Noonan was elected assistant comptroller.

Special Mention

O. K. Clutch & Machinery Co.: This company was purchased recently by Howard J. Sparler and Daniel J. Sparler of York, Pa. Charles H. Druschel continues as vice-president in charge of sales and manufacture.

Link-Belt Co.: Manufacture of custom-designed conveying and processing machinery has been put on a straight-line production basis in the new 300,000-sq ft plant at Colmar, Pa.

Armco Steel Corp.: Construction has begun on a new Armco Drainage & Metal Products fabricating plant at Mansfield, Pa. Operations are scheduled to begin late in the spring of 1953.

The Colorado Fuel & Iron Corp.: A wholly owned subsidiary of the corporation has contracted to buy all the manufacturing business plants and inventories of John A. Roebling's Sons Co. The business will be operated as a subsidiary of Colorado Fuel & Iron under the Roebling name. Charles R. Tyson, president of Roebling, will continue to direct operations.

Association Activities

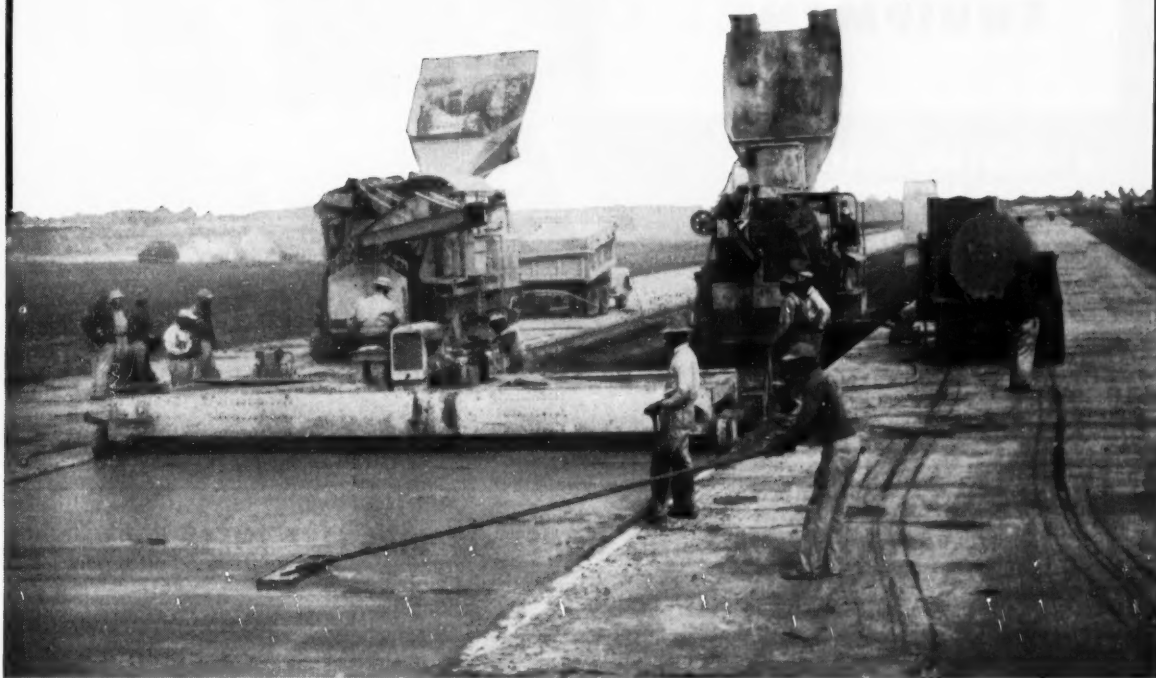
National Assn. of Home Builders: Frank W. Cortright, executive vice-president, has announced that he will relinquish that position on March 1, 1953 and take on a new assignment as special consultant to the association. NAHB officers accepted his resignation with regret and voted him a lifetime membership on the association's Executive Committee. No successor has been chosen as yet to replace Cortright.

Structural Clay Products Inst.: L. S. Meyer, president of the Hydraulic-Press Brick Co., St. Louis, Mo. has been elected president. Elected vice-president was Russel G. Eshe-naur, president of the Glen-Gery Shale Brick Corp., Reading, Pa.; George Gammie, vice-president of the Illinois Brick Co., Chicago, was re-elected treasurer; and Joseph J. Cermak of Washington, D. C., was re-elected secretary.

GULF PRODUCTS *and* **FINE SERVICE**

keep equipment rolling

on Florida Air Base Project



W. L. Cobb Construction Co. of Decatur, Ga., and Tampa, Fla., recently completed, ahead of schedule, the widening and lengthening of runways at the Pine Castle Air Force Base, Orlando, Fla. The project involved approximately 1,250,000 cubic yards of excavation, 230,000 tons of lime rock, 56,000 cubic yards of concrete, 98,200 tons of asphalt, and 40,000 feet of pipe.

JUST about No. 1 requirement for a smooth-running job is smooth-running equipment. That's why so many leading contractors, like W. L. Cobb Construction Co. for example, prefer the petroleum products identified by the familiar Orange Disc.

They have found that Gulf lubricants provide better protection for every gear and bearing; and that Gulf fuels help insure top engine performance.

Gulf lubricants and fuels work as a team to help contractors get more hauls, fewer overhauls, and bigger profits!

Let us discuss with you how Gulf products and fine service can help you on your next job. They are available to you through more than 1400 warehouses.



Rodgers Hydraulic JACKING EQUIPMENT...

- JACKING CYLINDERS
(50 TO 600 TONS)
- HAND AND POWER
PUMPS
- QUICK COUPLERS
- VALVES AND HOSE



Photo shows two Rodgers 300-Ton double-acting jacking cylinders (operated by Rodgers power-driven hydraulic pumps) jacking 72" compressed concrete pipe. Hose connects cylinders with pump.

SAVES YOU TIME AND MONEY ON JOBS LIKE THESE...↓



SEND FOR NEW CATALOG

To learn advantages of Rodgers Jacking Cylinders on construction jobs... get the new Rodgers Catalog No. 317. It gives full information.



Wherever you need versatile, efficient jacking power on the job — you'll want a Rodgers jack. A complete selection of hydraulic cylinders in various capacities and lengths of ram travel are available — to be used with either hand-operated or power-driven hydraulic pumps.

Cylinders may be operated either singly or as a group for a straight jacking of compressed concrete pipe, corrugated pipe, well casing, etc., or used in the operation of the shield jacking method. Two sizes of quick couplers, 4-way and metering valves, and high pressure hose are available accessories.

Complete specifications, illustrations and suggested uses are included in the new Rodgers Jacking Equipment Catalog.

**JACKING COMPRESSED
CONCRETE PIPE**

**JACKING
CORRUGATED PIPE**

**JACKING
WELL CASING**

**JACKING SHIELD
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HYDRAULIC POWER EQUIPMENT

PROSPERITY in the USA: Who Has It?

How prosperous *are* the people of the United States?

The previous editorial in this series answered this question for the average American. His prosperity has increased only slightly in recent years.

But the average tells only a part, and in many ways not the most important part of the story. Which individuals and groups have prospered more, which less? (The average, the result of a statistical calculation rather than a creation of flesh and blood, tells nothing about that.)

The purpose of this message is solely to get at the facts on this question of how prosperity is distributed. This is not easy. In spite of the crucial importance of the subject, the available information is limited. Even so it is possible to provide a rough answer to the question, "Who has the prosperity?"

We Have Had a Revolution

The distribution of income in the United States has changed so greatly in the past twenty years that Arthur F. Burns, Research Director of the National Bureau of Economic Research, world renowned for its impartiality and technical competence, calls it "one of the great social revolutions of history." A part of this revolution is portrayed by the following table which shows that individual incomes are both much larger and much more evenly

distributed than they were twenty years ago. Clearly, a large new middle-class has been created.

DISTRIBUTION OF REAL INCOME

Dollars of Income*	Per Cent of Families in Each Income Group	
	1929	1951
Under 1,000	17%	13%
1,000 - 2,000	24	15
2,000 - 3,000	24	18
3,000 - 4,000	14	18
4,000 - 5,000	6	15
5,000 - 7,500	9	14
7,500 and over.....	6	7
	100%	100%

*Adjusted for price changes to give the dollar its 1951 purchasing power.

Some light on why this income revolution has taken place can be found by tracing incomes to their source. Since 1929, for instance, employees have clearly made the biggest gains in total income. This can be seen in the next table. People who own their own businesses have done second best. Farmers, who are often thought to be doing handsomely indeed, have been outstripped in the income race by employees and businessmen. People whose incomes depend upon pensions, insurance policies, and other relatively fixed returns such as rent, interest and dividends have lagged far behind.

(Continued on next page)

HOW REAL INCOME HAS CHANGED*

Types of Income	Percentage Change 1929 to 1951
Wages & salaries of employees.	+123%
Income of professional men & unincorporated business	+108
Farm operators' income	+56
Rental income	+1
Dividends	+2
Interest	-35

*In this and the previous table account is taken of changes in the cost of living. But adjustment for the changing tax load was not possible, as it is in the computations which follow.

The Biggest Gains

Employees have made the biggest gains in income, but the term "employees" covers a wide assortment of people—from the presidents of the biggest corporations to factory sweepers. How have different groups of employees prospered? Some indication is provided by results of a survey of salaries in 41 corporations made by Arch Patton of McKinsey and Company and recently summarized in the *Harvard Business Review*. This survey showed that between 1939 and 1950, after adjustment both for higher living costs and for higher taxes, factory and office employees made modest gains in income while management personnel suffered losses ranging from 40% to 60%.

While factory and office workers generally have made greater income gains than others, their gains have varied greatly from industry to industry. During the past five years, for example, steel workers' take-home pay (adjusted for both taxes and price changes) has increased by 22%, that of textile workers 9%, employees of general merchandise stores 4%, and that of laundry workers not at all.

What About Organization?

How have organized workers fared compared to unorganized workers? There is no round-up of facts that makes possible a direct comparison between the two. Such evidence as there is shows it is indeed an open question whether union members have done any better than others. Steel workers, for instance, who are strongly unionized are among the highly paid manufacturing workers. Farm workers are generally not unionized, and they work

in one of the most competitive industries in America.

But farm workers have made income gains which far surpass those of steel workers. Real wages of farm workers increased 2½ times more than those in the steel industry between 1939 and 1952. This fact may prove nothing more than that, in a period of inflation and manpower shortage, the less skilled workers whose incomes are ordinarily low make the biggest percentage gain in income. Further support for this conclusion is found in the construction industry where real wages of unskilled labor increased 37% between 1939 and 1952, while those of skilled labor increased only 4%.

Why Most Incomes Are Higher

Prosperity, who has it? We may conclude that workers have been getting much more of it lately than managers or property owners, that unskilled wage and salary earners have made the largest gains, and that income generally is much more evenly distributed.

Where has the money come from to raise low bracket incomes? It has come partly from an increase in the total national income, but partly also from cutting down the share received by people in the highest income brackets. While the top 5% received 33.5% of the income after taxes in 1929, their share of income has now been cut about in half. For every \$11 of increase in income to the lower 95% of income receivers, about \$7 has come from increased production, and about \$4 by taking that amount from the top 5%.

Top bracket incomes have now been cut so deeply that the possibilities of increasing the income of the rest of the people by "soaking the rich" have largely disappeared. Indeed, if all of the income after taxes of everyone earning over \$25,000 in 1951 was taken away and redistributed among the remaining Americans, each person would receive only about \$65.

The significance of this revolution in income distribution is clear. It is that there is only one way by which the great mass of us Americans can continue to increase our individual prosperity. This is by earning the increase through more and more efficient production. In plotting the economic course of the U.S.A. this fact is of decisive consequence.

McGraw-Hill Publishing Company, Inc.

DIGGING — Contractor Del Balso of Bronx, N.Y., keeps his Model HM profitably busy. Here it's lowering grade for a new pavement . . . easily cutting the many tree roots encountered.



LOADING — Model HM doing a fast loading job on a dirt pile for Davis Construction Corp., Long Island. Fast reverse speeds and power boosted steering give this "PAYLOADER" high production on loading work.



BACKFILLING — A very popular "PAYLOADER" use is trench work — loading excess dirt and backfilling the trench. Tires do not injure pavements and the bucket can backfill over the top of sheeting or other obstructions.



SPREADING — On the Penn-Lincoln Parkway near Pittsburgh, Frank Mashuda's Model HM spreads shoulder material while concrete pouring goes on beside it. Good tire flotation and maneuverability is an important HM asset here.

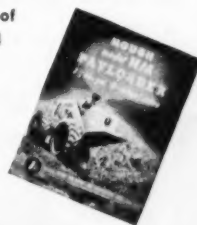
MASTER OF MANY JOBS

Big 4 wheel drive "PAYLOADER" tractor-shovels are capable and versatile — able to do many jobs and drive quickly from one job to another at speeds of 17 m.p.h. Big tires, plus 4-wheel-drive, gives them catlike traction and flotation to surmount poor ground conditions. Power boosted rear wheel steer makes them maneuverable and easy to handle . . . 4 gear ratios in each direction provide the right speeds to fit each task.

The powerful 1½ cu. yd. "PAYLOADER" is the flagship of the "PAYLOADER" fleet, which includes 7 sizes down to 12 cu. ft. bucket capacity. Also a choice of 4 wheel drive, rear wheel drive and

front wheel drive to best fit your needs. Your Hough Distributor, one of 200 in the U.S. and Canada, is ready to serve you right — with extensive application experience and complete parts and service facilities. The Frank G. Hough Co., 706 Sunnyside Ave., Libertyville, Ill.

WRITE for full information on any of the "PAYLOADER" models: Four Wheel Drive HM — 1½ yd. and HR — 1 yd.; Rear Wheel Drive Models HY — 1¼ yd., HF — ¾ yd., HE — ½ yd.; Front wheel drive Models HAH — 15 cu. ft., HA — 12 cu. ft.



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An OWEN BUCKET takes the "first" bite-into the earth. Starting the new \$5,000,000 E. 55th Street Interchange with Shore Drive. Cleveland, Ohio



"A mouthful at every bite"

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Two-stories-up pouring of . . .



Transit-mix is easy for a . . .

Light-Duty Crane

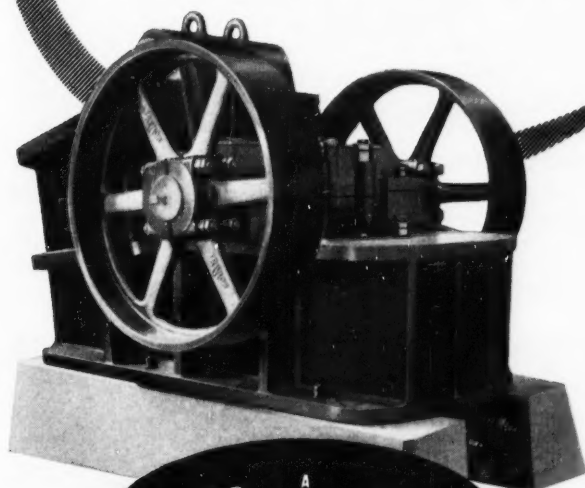
EVEN THE SMALL construction project needs crane service at some time, if only for a few minutes. To fill the need, the D. O. Limes Co., in Florida, rents out its Bucyrus-Erie Hydrocrane mounted on a Ford truck chassis, with the power take-off operating the crane. Above it is shown handling a 1/3-yd bucket to pour a reinforced concrete cap on top of a two-story masonry block wall.

more usable aggregate from every ton of rock

TRAYLOR'S CURVED CRUSHING SURFACES

reduce waste fines to cut aggregate costs.

Traylor Jaw Crushers are equipped with Curved Jaw Plates. These plates are designed to apply crushing force in a direct line! This drastically reduces the churning and lifting of material in the crushing chamber. Each zone in the crushing chamber is of increasing capacity. As material is crushed it is free to drop immediately toward the discharge opening.



PROGRESSIVE CONTRACTORS who are producing their own aggregate on the job, will find in any Traylor Jaw Crusher the means to further reduce costs. Traylor curved crushing surfaces have two major effects upon aggregate costs. Not only do they produce more usable aggregate, but they reduce power costs on every ton of material reduced.

Bulletin 4105 gives complete information on Traylor Type H and HB Crushers. Mail coupon for your copy today and see how to get maximum savings on job produced aggregate.



TRAYLOR ENGINEERING & MFG. CO.
527 MILL ST., ALLENTOWN, PA.

Sales Offices: New York • Chicago • San Francisco
Canadian Mfrs: Canadian Vickers, Ltd., Montreal, P.Q.

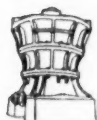
I'm interested in better aggregate at less cost. Send bulletin 4105 on Traylor H & HB Crushers.

Name: _____

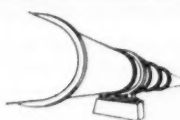
Position: _____

Company: _____

Address: _____ State: _____



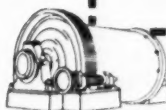
Primary Gyratory Crushers



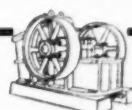
Rotary Kilns



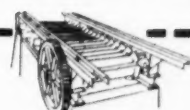
Secondary Gyratory Crushers



Ball Mills



Jaw Crushers



Apron Feeders

CONSTRUCTION EQUIPMENT NEWS



Folding Crane Boom on Hopto Digger Knocks Down in Less Than 3 Minutes

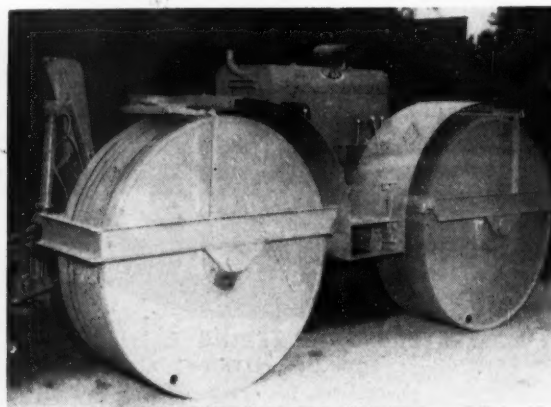
If you're looking for a mobile crane that can be mounted on a truck for general light-duty lifting, the Hopto Digger is one answer. What's more, the boom can be folded back and the unit made ready for over-the-road moves in less than 3 min. The rig pictured

here is a self-powered machine, though units served by power take-off from truck are still available (CM&E, April '52, p. 173). Swing is 180 deg; lift, 23 ft; capacity, 1,500 lb on 15-ft radius; cable travel, 40 ft.—Badger Machine Co., Winona, Minn.



Heavy-Duty Blade Fits Most Tractors

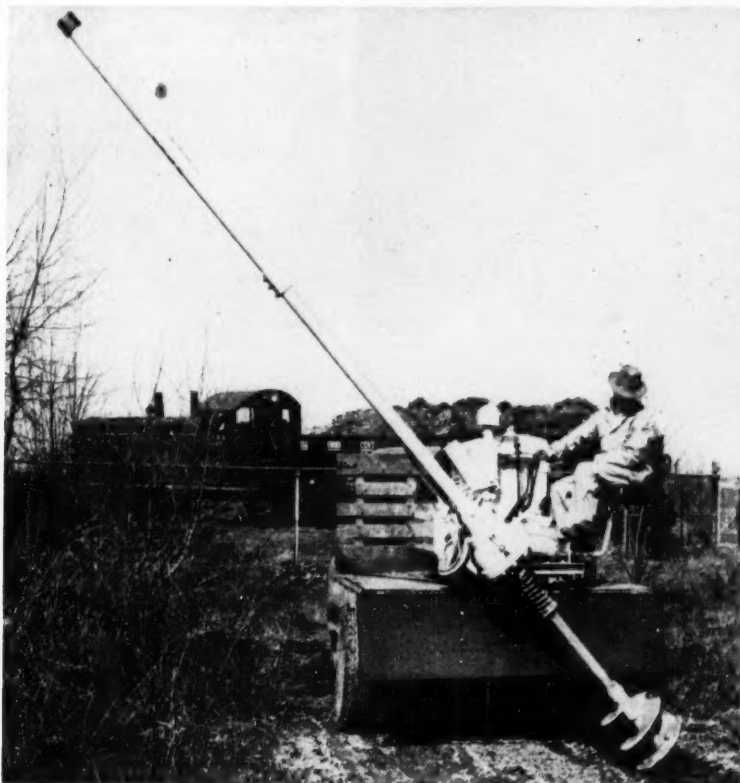
The big brother to well-known Holt farm 'dozers is this heavy-duty contractor's model which fits most crawler-type tractors. Use of a new alloy, Ductilite, reduces weight without any loss of strength in the unit.—Holt Equipment Co., Independence, Ore.



Adjustable Width on New APSCO Roller

This is the APSCO DTR-522 trench roller, which has two powered 20-in.-wide rolls which can track for double compression, or can be adjusted out to a 39-in. width for adjacent or overlapped rolling.—All Purpose Spreader Co., Fuller Rd., Elyria, Ohio.

On-the-Job Previews of Machinery, Tools and Equipment



Self-Powered Earth Drill Mounts on 1 1/2-Ton Truck

Mounted on steel skids and placed on the bed of a 1 1/2-ton truck is Buda's Y-1 self-powered, portable earth drill. Announced this month, the machine can drill holes from

6- to 36-in. dia, vertically or at any angle. Transmission has four forward speeds, one reverse, powered by Buda gas engine.—**The Buda Co., Harvey, Ill.**



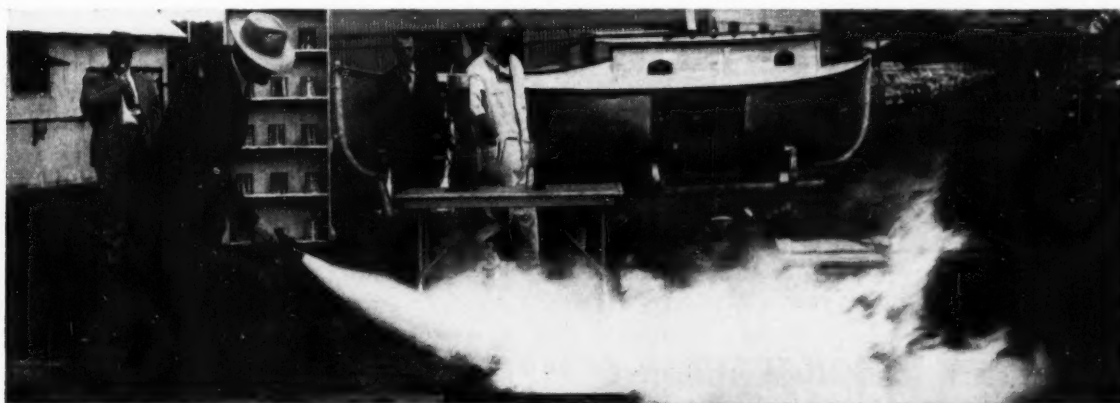
Side Shift for Graders

An optional attachment for all American graders is the hydraulic side-shift attachment pictured. Shift to right or left is 24 in., reaching 56 in. beyond tires.—**American-Coleman Co., Omaha, Neb.**



Conduit Is Flat-Sided

Multi-way duct systems can be built up quickly with soapstone non-metallic conduit for underground power lines.—**Soapstone Duct Co., Menlo Park, Calif.**



Kidde's New Dry Chemical Fire Extinguisher is Rechargeable At Any Air Hose

Smallest and most versatile of the new series of Kidde dry chemical fire extinguishers is the 5-pounder (Model 5P) shown here doing a remarkably fine job of dousing a gasoline fire. With its mounting hook or bracket it can be kept in a car, truck, office,

etc. It's pressurized with 150 lb of dry air and needs no cartridges, replacement parts or tools for recharging. With a squeeze of the trigger the pressurized air forces the powder upward through a syphon tube to assure complete discharge of all contents.

(Continued on next page)

UPSON-WALTON

CONSTRUCTION EQUIPMENT NEWS . . . Continued



Basilio Notaro uses his many years of Upson-Walton experience in adjusting wire rope forming dies.

Wire rope craftsman

IT takes more than machines to build an *outstanding* wire rope . . . it takes men with the skill born of long experience. Upson-Walton wire rope is engineered for safety . . . and quality control checks are applied throughout manufacture by men who are craftsmen at their tasks.

Specify Upson-Walton for the extra care and experience that mean longer, safer service from your wire rope.

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Wire Rope • Tackle Blocks • Fittings

YOU CAN DEPEND ON UPSON-WALTON'S 81 YEARS OF EXPERIENCE

A pressure gage in its handle immediately indicates if it's in operating condition. Underwriters Labs approves the extinguisher but requires the use of a moisture trap when recharging the unit from any commercial air hose. Kidde provides a special adapter which fits on in place of the diffuser horn and permits use of any standard air chuck. An adapter can also be provided for charging the unit with nitrogen instead of air. Other extinguishers in the dry chemical line are the company's 20- and 30-pounders, charged with cylinders of liquefied CO₂ stored at 850 psi. Largest is a 150-lb wheeled model expelled by nitrogen stored under pressure of 2,000 psi with powder chamber pressure held to 210 and 230 psi.—Walter Kidde & Co., Inc., Belleville 9, N. J.



SEAMLESS AND THIN - WALL TUBING—Specialty tube mills have heretofore offered larger diameter, light-wall tubing only in welded grades. Superior Tube Co. has announced an increase in its size range of seamless light-wall tubing from 1¼ in. OD maximum to 2 1/16 OD. The aim is to increase the number of applications of light-wall tubing, particularly where pressures exceed the limits for welded tubing. The company's large-diameter, light-wall seamless tubing is furnished in three stainless analyses—AISI Types 304, 321 and 347 and in Monel metal. It is also produced in three tempers: No. 1, fully annealed, No. 2, half-hard drawn and No. 3, full-hard drawn. Length ranges from 5 to 22 ft in random, multiple or cut lengths. Standard OD tolerances are + .005 in. to - .000 in. on tubing up to 1½ in. OD. On tubing from 1½ OD to 2 1/16 OD inclusive, the tolerances are + .010 in. to - .000 in. Wall thickness tolerance is + .010 in. on all sizes.—Superior Tube Co., 1596 Germantown Ave., Norristown, Pa.

6 JACKSON MONEY-MAKERS for '53



1-A



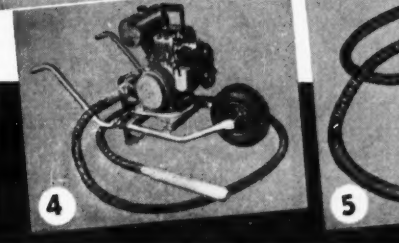
1-B



2



3



4



5

1. A NEW, FASTER VIBRATORY COMPACTOR

(a) FOR BITUMINOUS MIXTURES — In highway widening and patching, paving drives, walks and kindred jobs, there's nothing like the self-propelling, highly mobile JACKSON COMPACTOR. Powered by a JACKSON Power Plant on auto trailer with quick pick up device for compactor, it will compact 2400 sq. ft. per hour close to maximum density.

(b) For COMPACTION OF GRANULAR SOILS — in concrete floor sub-bases, bridge approaches, close to abutments, and similar applications, the same machine described above, available with quickly interchangeable bases of 12" to 24" widths, will achieve specified density in 8" to 12" depths at the rate of 2400 sq. ft. per hour in granular soils of optimum moisture content. A tandem version is amazingly efficient in compacting sub-bases for pavement widening.

2. THE MOST PRODUCTIVE OF ALL SCREEDS —

for municipal paving, highway widening, bridge decks, etc. The JACKSON vibratory electric screed, powered by a JACKSON Portable Power Plant, strikes off to all crowns, undercuts at curb or sideform, works right up to and around manholes and other obstructions. Permits pouring slabs up to 30' wide without center joints. May be rolled back for second passes on 4 rollers.

3. MASS CONCRETE VIBRATOR — Offers the fastest, most efficient means of placing mass concrete in dams and similar construction.

4. 6 H.P. ENGINE-DRIVEN, FLEXIBLE-SHAFT VIBRATOR — provides the last word in uninterrupted service and reliability. Ideal for both thin and thick concrete sections.

5. 2 1/2 H.P. ELECTRIC VIBRATOR (for light-socket operation) — Handy as a pocket in a shirt, powerful enough to handle all general construction concrete vibration.

6. DUAL CURRENT PORTABLE POWER PLANTS — Provide both single and 3-phase, 60 Cy. 120 V, AC. (also 240 V in larger Models). Equipped with permanent-magnet generators requiring no maintenance or adjustment. 1.5 to 7.5 KVA capacities.

PORTABLE
POWER PLANT
Model JV2500 —
2.5 KVA

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JACKSON VIBRATORS Inc.
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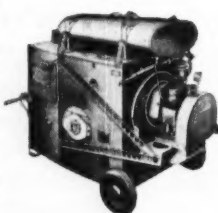
Add weeks of working weather to your winter schedules

As inevitable as death and taxes, bad weather will hit your construction schedules this winter. Plan *now* to equip your jobs with Herman Nelson Portable Heaters. Lick winter slow-downs—keep crews on the job—in toughest weather.

Herman Nelson Portable Heaters deliver heat where you want it—when you want it. These versatile oil burning units heat, thaw and ventilate, do not expel dangerous fumes into enclosed working areas.

The only completely safe portable heater that uses flexible ducts to spot heat where most needed—and remember, only uncontaminated air heaters are absolutely safe.

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HERMAN NELSON STANDARD MODEL

Capacity 250,000-385,000 BTU/hr. Gasoline engine powered. Self-contained for areas lacking electricity. Other models available—electric powered—with capacities from 125,000 to 450,000 BTU/hr.



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Herman Nelson Division, Dept. 15

American Air Filter Company, Inc., Moline, Illinois

Gentlemen: Please send me complete information about Herman Nelson Portable Heaters and a free copy of your Cost Control Booklet.

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Title _____

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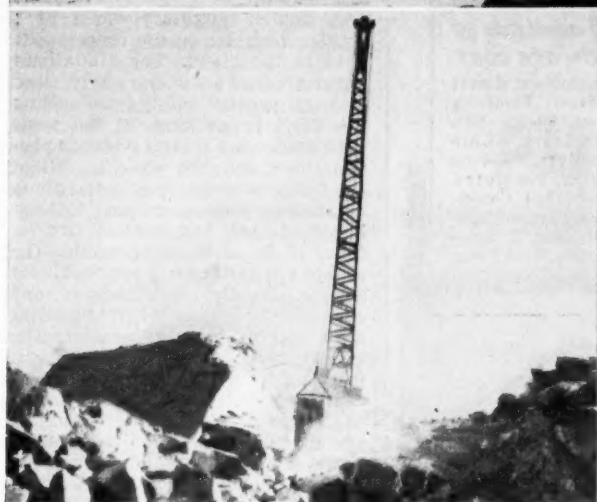
Address _____

City _____ State _____

ABRASIVE BLADES — The photos above show only three of the hundreds of applications to which contractors can put the three new types of abrasive blades made by the Porter-Cable Machine Co., designed to fit its new high-speed, kick-proof electric saw. The worker in the photo at left is using the new red label blade which cuts compositions such as Transite, Mycaloy, asbestos, Masonite, fiber board; and non-ferrous metals such as aluminum roofing, copper gutters, zinc flashing and bronze pipe. In the center photo another workman is using a green label blade which has been designed to cut all stone and masonry products, including concrete or cinder blocks, brick, tile, terrazzo, marble, slate, granite, porcelain; and plastic materials such as Lucite and Bakelite. In the right-hand photo a third workman is using a blue label blade reserved for iron and steel in its various forms. The company found a general air of indecision on the part of the numerous abrasive blades on the market is the right one for cutting a particular substance. The research division tested a complete variety of abrasive blades on every kind of material and charted the results. These tests show that only three types of blades are necessary to cut, score or grind almost any material and, for quick identification, these new blades are packaged in three different colors to designate respective uses. Blades are available in 6-, 7- and 8-in. diameters. According to the manufacturer, the new blades may be used on any electric saw, but for two reasons they will cut most effectively when used on one of the company's Speedmatic or guild saws. These have a much higher rpm than most makes, and abrasive blades cut cleaner and last longer when run at high speed. Secondly, the Porter-Cable saws have a new patented kick-proof clutch. If the blade jams or binds in the work, it stops instantly, while the slip clutch allows the motor to keep on running. This protects the operator from injury, prevents damage both to the blade and material being cut.—Porter-Cable Machine Co., Exchange St., Syracuse 8, N. Y.



PALISADES DAM — Two Model 4500's owned by J. A. Jones and C. H. Tomkins each handling over 10,000 yds. in 20 hr. shifts.



CHIEF JOSEPH DAM — Model 4500 Dragline owned by Columbia River Constructors, on a really tough excavation job at this huge dam near Bridgeport, Wash.



FOLSOM DAM — Model 4500 Dragline owned by Merritt-Chapman & Scott-Savin, loading trucks. Another Manitowoc 3900 also on job.

There's a big switch to Manitowoc all over the country — big jobs, small jobs — big contractors, small contractors — are all replacing with mighty Manitowocs.

They've found what they're looking for — the power and speed for big yardage — the extra heavy, rugged construction for long life — the simplicity of design for lower operating costs — the quick convertability for greater versatility — the ease of operation for operator comfort and productivity.

No other excavator can match a Manitowoc in performance — because no other excavator has the built-in features and extra values found in a Manitowoc.

May we prove it to you? Send for catalogs on the mighty Manitowocs, now. Manitowoc Engineering Corp., Manitowoc, Wisconsin.

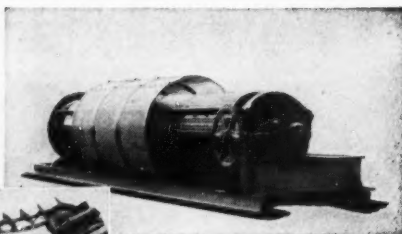
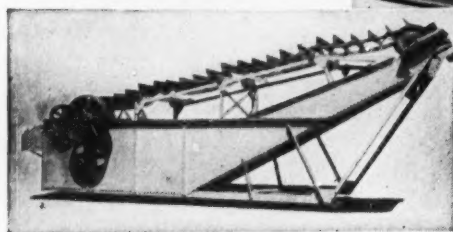
MANITOWOC

SHOVELS
1-5 YD.

Speed Line

CRANES
18-100 TON

Clean sand, gravel
at a cost that
doesn't clean your
pocketbook



Rely on
RELIANCE

UNITS OR COMPLETE PLANTS

Only proper screening and washing can cut costs—and that is where RELIANCE EQUIPMENT makes its reputation. These Units have been greatly improved in the past few years and today many regard Reliance as standard for best results. Let us tell you more about their smooth operation and rugged construction. Write for Catalog 48.

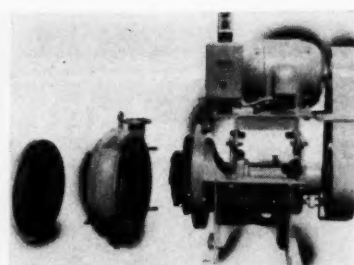
UNIVERSAL ROAD MACHINERY CO.

KINGSTON, N.Y., U. S. A.

Distributors in all principal cities of U. S. A.

RELIANCE PRODUCTS still available at moderate cost

Rock Crushers, Bucket Elevators, Revolving Screens, Storage Bins, Pulverizers, Chip Spreaders, Heating Kettles, Bin Gates, Feeders, Belt Conveyors, Grizzlies, Air Separators, Sand & Gravel Spreaders, Wash Boxes.



RUBBER LINING ON PUMPS —

Vacseal is the name applied to a series of solids- and acid-handling pumps manufactured in rubber-lined and all-metal types in sizes 2, 3, 4, 6 and 8 in., with capacity ranges up to 3,000 gpm. These pumps operate on the patented "vacuum-seal" principle which prevents fluids or the entrained solids from being forced into the gland. The impeller is a disk with pumping vanes on one side and smaller auxiliary vanes of a greater diameter on the reverse side next to the gland. These auxiliary vanes produce a vacuum on the shaft seal and prevent solids from cutting the shaft or packing, at the same time precluding sealing water to protect the gland and packing. All of the features which enable the pump to produce suction are said to have been retained and suction lifts of from 10 to 12 ft are possible. The pumps are particularly applicable for service in the construction and cement industries when handling sand and gravel and cement. The rubber lining is vulcanized to cast iron parts with a thermo-setting cement. This type of Vacseal can be made acid-proof merely by changing the gland bushing and installing a shaft sleeve. All metal pumps are constructed of Ferloy iron for handling larger particles and higher heads than the rubber-lined type. Heads up to 150 ft are possible with this type. For special applications lining materials such as neoprene and silicone rubber compounds are available.—The Galigher Co., 545 W. Eighth S., Salt Lake City, Utah



No. D4W — for
handling sand and
other dry materials. 14 ga. tray.
Max. cap. 4 cu. ft.

Wheel Your Materials . . . at LOW COST!

You'll like these new, lightweight, easy-wheeling Sterlings, designed for faster material transport service. Famous Sterling balanced construction puts 80% of the load on the wheel . . . only 20% on operator. Equipped with long wood handles, formed to fit operator's hands. Steel channel legs and reinforcements are just the right height. Means less stoop for operator and greater leg clearance. Steel wheel, roller bearing wheel with pneumatic tire or zero pressure cushion type wheel, can be furnished. Write for new Wheelbarrow Catalog.

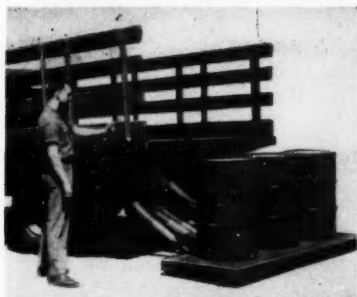
STERLING WHEELBARROW CO., Milwaukee 14, Wis.

Sterling
WHEELBARROWS

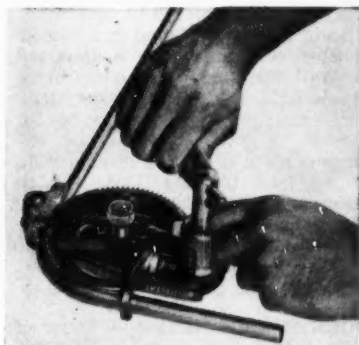


Look for this Mark of
STERLING Quality

ROAD SWEEPERS—Since taking over distribution and manufacture of Hough road sweepers, the Meili-Blumberg Corp. has developed a line of improved models including tractor-mounted sweepers as well as pull types—both traction- and engine-powered. Most recent is the 53M pull-type, powered by a Wisconsin VE4 engine. The 30-in. dia brush is 96 in. long and can be set at an angle of 30 deg to sweep a 78-in. path to right or left. A hydraulic-powered ram lifts and lowers the brush and locks it high for fast trailing speeds. A balance spring on the frame enables the brush to float over uneven surfaces. Brush is set for 140 rpm but can be varied with engine speed. A sprinkler attachment is optional.—Meili-Blumberg Corp., New Holstein, Wis.



HYDRAULIC LIFT TAILGATE—A new hydraulic end-loader for all makes of motor trucks is announced by Galion and called the "Load-elevator." The unit is available in four models with loading space of 28x84 to 34x90 in. Models are adaptable to all trucks of 1½-ton size and over. Load capacity is 2,000 lb. Power for the hydraulic tailgate operation is supplied direct from the truck engine through a transmission-mounted power take-off. This activates a Galion hydraulic hoist which lifts or lowers the end gate as desired. Action is controlled by a single spring-loaded lever which assures constant, positive, safe operation. Heavy tubular lift arms with built-in overload capacity are another important safety factor.—**The Galion Allsteel Body Co., Galion, Ohio**



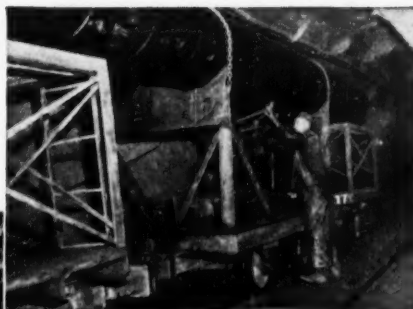
GEAR-TYPE TUBE BENDER—Universal tube bender is so constructed that it can be positioned on a piece of tubing at any point where a bend is desired. Bends can be made even when one end of the tube is connected. It can be used to make right- or left-hand bends, return bends, offset bends and right-angle bends. Bending is made easier through high-gear ratio, which is of particular advantage when working with hard-temper tubing or large-size tubing. In addition to being placed directly on a pipe, the bender is designed so that it can be held by hand, clamped in a vise, or bolted to a bench. An extension handle can be had which permits holding the bender in a pipe vise. It bends any type of tubing, including hard-drawn copper, hard-temper steel, stainless steel, aluminum and brass.—**Imperial Brass Mfg. Co., 1200 W. Harrison St., Chicago 7, Ill.**



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NAYLOR *Lightweight* **PIPE**



Where the job calls for ventilating or other air lines for either high or low-pressure service, more and more contractors are specifying Naylor pipe. Here is the one lightweight pipe with the built-in strength and safety required for this service. Its light weight makes it easy to handle and install, especially with Naylor's Wedge-Lock coupling. Its exclusive Lockseam Spiralweld structure provides a reinforcing truss which adds collapse strength for push-pull applications. Features like these make it particularly helpful in the construction field. Sizes from 4 to 30 inches in diameter.

For the facts, write for Bulletins No. 507, No. 513 and No. 514.

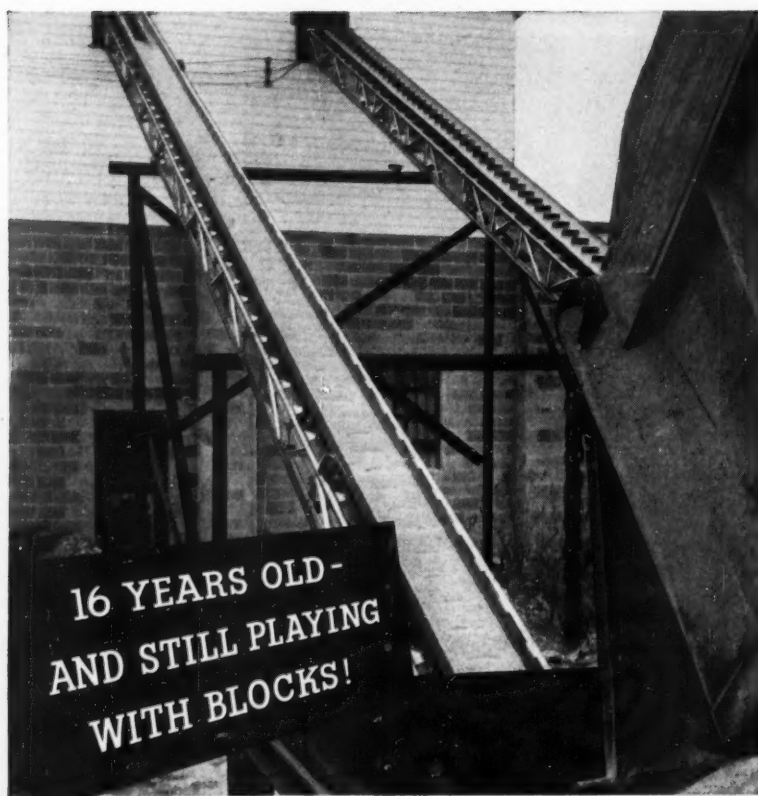
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**16 YEARS OLD-
AND STILL PLAYING
WITH BLOCKS!**

Original Farquhar Conveyor Sells Cement Block Maker on Six More!

The Farquhar Conveyors you see here (handling aggregates from receiving hopper to storage hopper) are just two of seven bought by Seberger's Concrete Block Co., Gary, Indiana, in the past 16 years. Complete satisfaction with the original conveyor (still on the job after 16 years) was one of the biggest reasons for the purchase of the other six. In the owner's own words, "This satisfaction has always been reaffirmed in subsequent purchases. Farquhar Conveyors provide high capacity units at reasonable investment and subsequent low maintenance cost. Your service facilities have always been excellent!"

Whether you move coal, gravel, sand, aggregates, cartons, boxes, bundles, bales, or any kind of bulk or packaged materials—horizontally or from floor to floor—Farquhar can cut *your* handling costs to rock bottom! One or more of the complete line of Farquhar portable, semi-permanent and permanent power-belt or gravity conveyors will solve your handling problem. Our engineers will be glad to consult with you . . . at no obligation!




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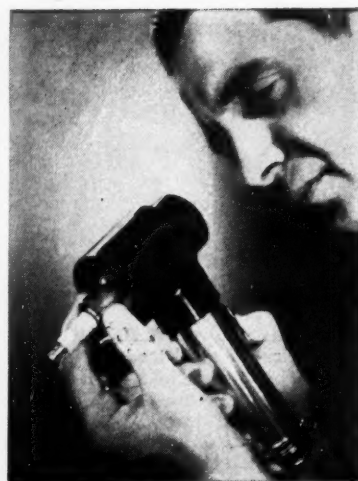
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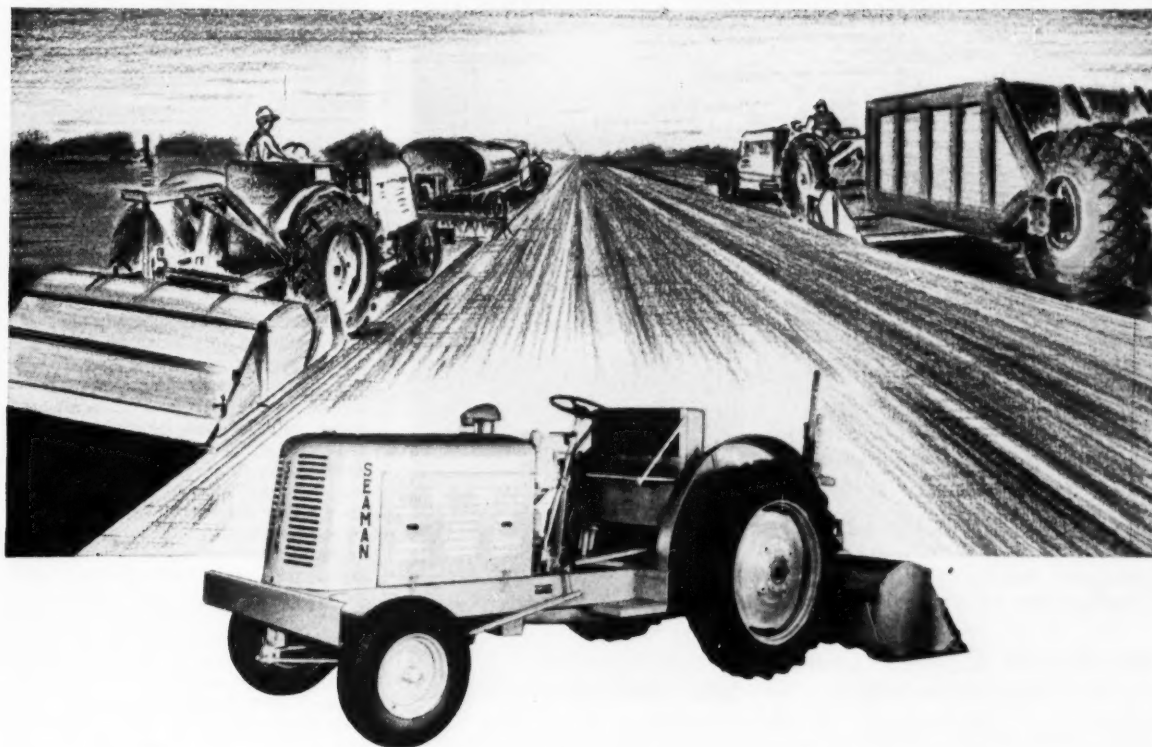


SPARK-PLUG INSPECTION TOOL

—A welcome addition to any mechanic's tool kit is an inspection tool, designed for close examination of automotive spark-plug firing ends. Combining a flashlight and magnifying glass of 2½-power, the viewer permits critical examination of fuel deposits for the entire length of the insulator nose. In addition, it reveals incomplete or uneven abrasive cleaning, detects cracked or chipped insulators, checks condition of electrode sparking surfaces and points out the need for replacement of spark plugs. The 1½-in. dia magnifying glass is mounted in a plastic housing combined with a standard two-cell flashlight into a single unit. The hole in the bottom of the housing, excepting the plug to be inspected, is shielded to cut out excessive natural light. The position of the bulb permits light of high intensity to be directed into the bore of the spark-plug shell without any light getting into the eye of the user.—**Champion Spark Plug Co., Toledo, Ohio**

POCKET-SIZE METER — Some of the uses for the new Amprobe "300" pocket-size volt-ammeter are: determining load conditions; checking motor overloads; balancing loads; locating grounds; tracing shorts, start and run currents or relay settings; checking open windings in motors, voltage losses and controllers. The instrument is of snap-around type which enables the user to measure currents instantly without shutting down equipment or making ammeter connections. Voltage test leads are equipped with retractable safety plugs which automatically insulate them upon removal from the meter. Jaws are completely insulated down into the sockets, protecting against shorts and shocks. Probe jaws are pointed for working in crowded switch and terminal boxes. No-rim window floods scale with unobstructed light from the sides. The instrument is pocket-size and belt-mounting. — **Pyramid Instrument Corp., Lynbrook, N. Y.**

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with a SEAMAN PULVI-MIXER

Processing time for higher compaction cut by 400 per cent . . . Cost reduced by 500 per cent . . . \$175,000 saved on one compaction job. These are examples of results achieved by the SEAMAN PULVI-MIXER on earth dams and fills throughout the world.

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vast improvement in densities. On one job, repeated harrowing and 20 passes with an unusually heavy roller failed to achieve more than an inadequate 92% density. After only one passage with a SEAMAN, then rolling out, the specified density of 95% was exceeded. The actual was 98.5% instead.

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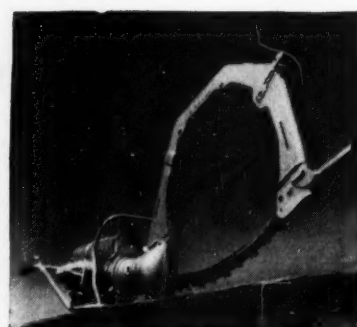


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Optional Equipment: Gin Pole Assembly, "Chicago" Boom, Tip-Over Bucket, Truck Mounting, Interchangeable 10' Extensions.

**CONSTRUCTION MACHINERY COMPANIES
WATERLOO, IOWA**



FREE-FLOW BOW SAW—Several developments in chain saw design are offered in one tool, a free-flow bow saw announced by Disston. In field tests made throughout the U. S., the machine cuts through seasoned 17-in. beech logs at the rate of better than 1 in. per sec. Instead of riding around the groove of an oval steel rail, the new bow chain, after traveling a 25-in. bite span, is carried inside the bow casting on four ball-bearing idlers. As a result of this reduced friction, it travels faster and wears less, according to the manufacturer. One idler acts as a tensioning point, controlled from a rubber grip handle high on the bow frame. It turns easily to increase or decrease chain tension. A lower handle—for use in two-man operation—folds compactly against the frame, permitting one man to buck logs lying so close to each other that the ordinary saw could not cut one without interference with another. Instead of running free through the bite span, the teeth in the new bow saw ride a groove in a 2-in. wide guard rail. The log can pinch on this rail but not on the chain travel. The saw is powered by a Mercury gasoline engine and is designed with extra strength. The free-flow principle permits the chain to be slipped on or off the idlers in a few seconds.
—Henry Disston & Sons, Inc., Philadelphia, Pa.

PRESPLY—Masonite Corp. is now producing Presply, a special panel with faces of Presdwood sandwiching a plywood core. It's available in 4x8-ft panels, in thickness of 1/2, 3/8 and 3/4 in. Two grades are manufactured; interior and exterior. Because Presdwood is grainless, the surfaces can be treated with paint, enamel, lacquer, shellac and varnish; because of the plywood core the material can be sawed, shaped, rabbeted, routed, drilled, nailed or glued — Masonite Corp., Chicago, Ill.

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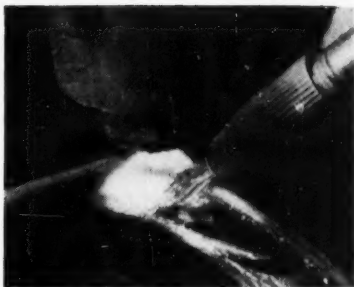
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AUTOMATIC HARDFACING PROCESS—As a result of the need for improved methods in depositing tungsten carbide hardfacing material on tool joints for well-drilling rigs, Air Reduction Sales Co. has developed an automatic Heliweld hardfacing unit. The new process uses a standard Heliweld head and a unit for feeding the bulk tungsten carbide. It's limited only by the ability to position the work and the arc in proper relationship to each other. In operation, the Heliweld arc melts the base metal, producing an elongated pool and tungsten carbide particles are poured into this pool behind the arc, as the photo clearly illustrates. The rate of particle feed is accurately controlled by electricity. According to the manufacturer, tests have repeatedly shown that abrasion resistance of deposits made by this process is considerably better than that attainable with other arc methods.—Air Reduction Sales Co., 60 E. 42nd St., New York 17, N. Y.



ANGLE-TYPE AIR TOOLS — A series of three angle-type drills, to be known as the 11C series, have just been announced by Keller Tool Co., and are powered to drill holes at right angles in aluminum or brass from 9/16 to 3/4 in. dia and in mild steel from 1/2 to 11/16 in. dia. They are especially desirable for close-quarter work, as illustrated where larger size drills are required. Since they are air-powered, stalling of these drills will not injure them or their air motor in any way. The series comprises three motors of different speeds and five angle attachments—all interchangeable—so that fifteen variations of speed and chuck sizes are available.—Keller Tool Co., Grand Haven, Mich.

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To save costly delays and special handling charges, this ingenious contractor simply drove his La Crosse flat bed right into the manufacturers' plant under this huge 12½ ton ready-mix storage silo — lashed it securely into position — and drove it away in a few minutes. You, too, can save time, trouble and money by doing your own equipment hauling on job-proved La Crosse trailers. Choice of flat, drop, or tilting platforms—6 to 67 tons capacity. Write for free descriptive literature.

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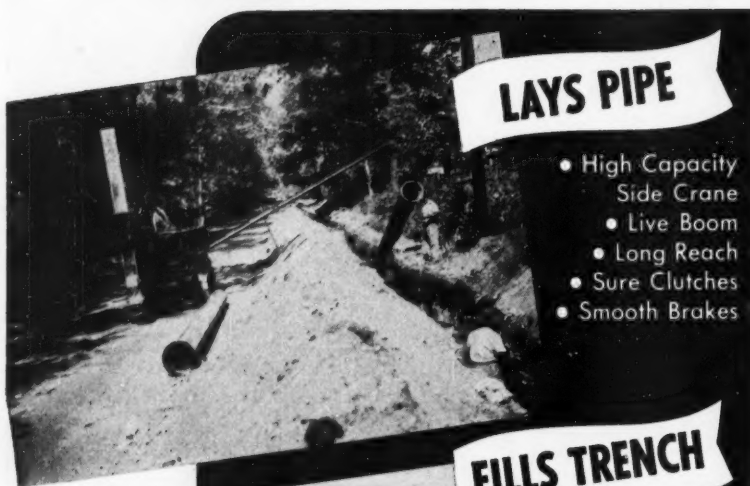
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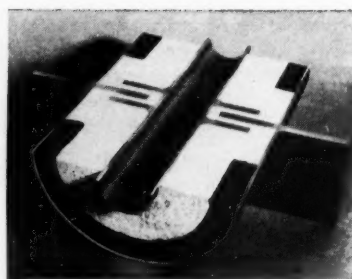
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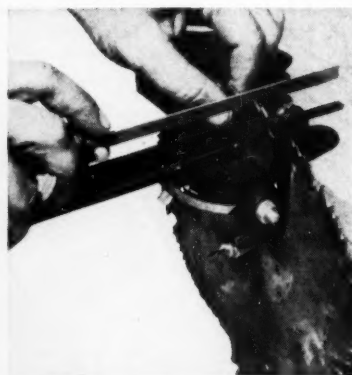


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- Fills From Either Side of Trench
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- Fits More Jobs



INSULATED ANCHOR—Durant Insulated Pipe Co. has been granted basic patents on a new type of insulated anchor shown in a cutaway cross-section. It has been designed for use in underground insulated pipe systems conveying hot or cold liquids or gases. The anchor is so constructed that contact is eliminated between anchor plate and pipe. The plate is insulated from the pipeline, both thermally and electrically, by a non-compressible block of Transite sheet material. The design and material serve to minimize heat loss at anchorage points and to prevent pipeline corrosion due to electrolytic action. According to the manufacturer, the entire line can now be insulated from ground by taking supplementary precautions to insulate the line at terminals.—**Durant Insulated Pipe Co., Warren Way and Bay Rd., Palo Alto, Calif.**



FOOLPROOF SAW SHARPENER—Sawfilers will be interested in this new speed circular saw sharpener which is practically foolproof. For precision filing, the workman merely clamps the sharpener to his work bench, places a circular saw blade on it with the proper mandrel, makes two simple adjustments and begins his job of filing. In 20 min. or less, the job is finished. Cross-cut, hollow ground, combination and rip saw blades can all be sharpened with little or no previous experience. Simple calibrations are marked on the shoulder of the guide arm and the file holder, and the sharpener is fully guaranteed. The kit comes complete with three-cornered file, four mandrels and detailed working instructions.—**Speed Corp., 512 N. E. 73rd Ave., Portland, Ore.**



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Hard-rock tunnels unlock reserves of Pennsylvania Anthracite

Tunnels driven deep into the mountains of Eastern Pennsylvania don't often make headlines because most of these bores are a familiar phase of long-range programs for opening up anthracite reserves well in advance of mining operations.

Galen H. Messner, an independent contractor, has been identified with hard-rock jobs in the anthracite region for more than thirty years. He specializes in development tunnels, slopes, and shafts. Some of his contracts call for driving steep rock holes for use as loading chutes and for ventilation; other jobs involve haulageways several miles long.

One of his current contracts is the driving of a cross-section tunnel at the Glen Burn Colliery, Shamokin, Pa. This type of tunnel, usually about 1200 ft long with a one-half per cent grade, is driven at right angles to a haulageway and cuts through the anthracite veins which occur here in narrow, steeply pitched seams.

In drilling a typical round, hand-cranked drifters on column mountings bore 8-ft holes through sandstone, shale, and hard conglomerate, using Bethlehem hollow drill steel fitted with detachable bits. Loaded by a two-drum air hoist, muck is hauled by mules—yes, real live mules!—to the nearest haulageway.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

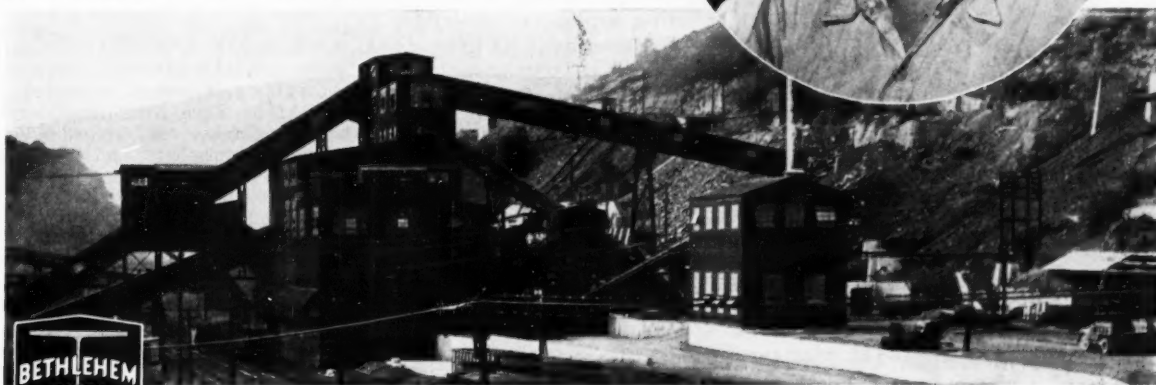
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

Glen Burn Colliery at Shamokin, Pa., is operated by Susquehanna Collieries Division of M. A. Hanna Co. This mine has produced high-grade anthracite for 100 years.



Bethlehem hollow drill steel fitted with detachable bits bores 8-ft holes into abrasive sandstone at the heading of this cross-section tunnel, about 7 ft high and 10 ft wide, at Glen Burn Colliery.

Galen H. Messner, veteran Shamokin contractor, has driven more tunnels than he can remember. He operates his own shops for reconditioning bits and rods. About Bethlehem hollow drill steel, he offered this terse comment: "Well, I've been using it exclusively for better than twenty years. What more can I say?"



BETHLEHEM HOLLOW DRILL STEEL

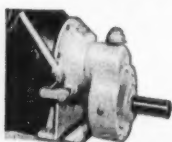
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INJECTION-MOLDED FITTINGS—

Yardley plastic pipe and fittings, produced from tough Tenite, are speeding the laying of pipelines in oil-field and industrial systems. The fittings are molded in a variety of sizes and shapes, either slip-sleeve or threaded, to fit extruded pipe with diameters up to 6 in. Slip-sleeve couplings can be quickly and permanently bonded into lines by a cement and thinner which have an affinity for the Tenite, a cellulose acetate butyrate produced by Tennessee Eastman Co. Lightweight and high in impact strength, these pipe and fittings are made to simplify handling and installation problems. In service they have proved resistant to corrosion, wear and varying weather conditions. —Yardley Plastics Co., 142 Parsons Ave., Columbus, Ohio

DOUBLE - GRADED LUBRICANTS

—In January 1952 the Society of Automotive Engineers' Technical Board adopted an SAE-75 grade gear lubricant, designed to take care of extremely low temperature service, especially when and where gear shifting is a problem. It was aimed at reducing service complaints in areas of low temperature operation. The Kendall Refining Co. responded in a unique manner by marketing an SAE 75/80 gear lubricant. The company's research engineers reasoned that the ideal lubricant would be one that combined the fluidity characteristics of an SAE-75 with the stability and extra gear protection offered in an SAE-80. Such a lubricant could be used safely over a much wider range of atmospheric and operating temperatures. They produced an SAE 75/80, which led to further research and the ultimate development of an SAE 80/90 and an SAE 90/140. These three double-graded lubricants will be marketed in Kendall's All-Oil, as well as their SCL hypoid multi-purpose type of gear lubricants. Kendall claims to be the first and only refiner to market a complete line of such double-graded gear lubricants. —Kendall Refining Co., Bradford, Pa.

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Bakers ...
and Busy
Dressmakers ...**



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many men require four and six transfusions during delicate operations. And the blood *must be there*—when it's needed. So give the most precious gift of all—*your blood!*

Be assured that giving blood is neither difficult nor distressing. And what a thrill there is in knowing that you've performed a really unselfish act! So call your local American Red Cross today and make an appointment. And tell your friends and neighbors about your experience. Let them share the wonderful feeling Americans get when they roll up their sleeves—and give blood.

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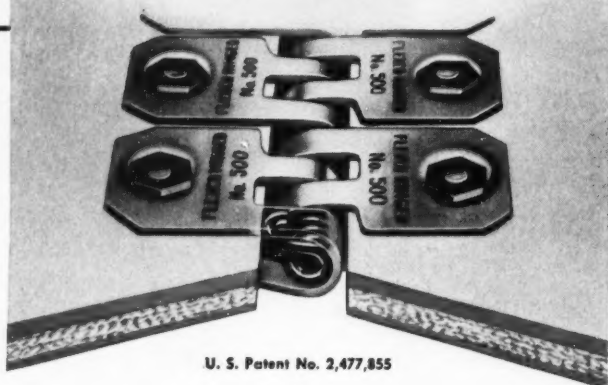
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TONGUE-AND-GROOVE HARD-BOARD SHEETS—A new development in the fast growing hardboard industry in the Pacific Northwest is the production of this light, natural wood color tongue-and-groove panel, 16 in. x 8 ft, designed for fast and easy application of wall paneling over studs or over old plaster walls. The panels are made from refined wood fibers, treated and compressed into smooth hardboard. Trade-named Tee-N-Gee, the new panels are produced through a post-treatment process that enables fast production from lumber mill waste at reasonable cost. In panel form this hard-wood product is packaged eight to a carton for convenient handling. The panels are applied by nailing or stapling in the $\frac{3}{8}$ -in. tongue which is covered over by the joining panel, leaving no visible nails or nail marks.
 —Forest Fiber Products, Forest Grove, Ore.

RUST INHIBITOR FOR ROCK SALT—Use of rock salt is one of the most effective methods for street and highway engineers to keep snow-covered roads and streets open and safe for travel in winter. One of the bad features of this treatment, however, is the fact that briny slush is highly corrosive to vehicles, steel overpasses, bridges, etc. That drawback and all its attendant complaints have been done away with, according to the manufacturer, by the addition of Banox to the salt. One percent by weight is all that is needed. Banox is a rust inhibitor. Mixed with the salt, it eliminates all objections to the use of salt for keeping streets in driving condition. It is a non-toxic, odorless, polyphosphate compound which the manufacturer claims is harmless to the skin, eyes, clothing, shoes, animals, paint, auto finishes and tires. A number of public officials prefer Banox in a colored form so the presence of the rust inhibitor in salt brine is readily noticed. Therefore, Banox No. 1 contains a harmless and non-staining coloring agent which causes treated slush to glow with a faint green color. Banox No. 1-P is available as a colorless material.—Calgon, Inc., P. O. Box 1346, Pittsburgh 30, Pa.

New PUBLICATIONS From MANUFACTURERS

The catalogs and bulletins reviewed below will keep you posted on latest developments in construction equipment and materials available for your use.

JOINT SEALING COMPOUND—A new, revised 4-p data sheet describing Flintseal rubber asphalt hot-poured joint sealing compound for concrete pavements has been issued by the Flintkote Co. Illustrations show the latest specialized equipment used for melting and pouring Flintseal and also methods and machines used in cleaning and preparing joints for sealing. A copy of the new data sheet No. I-H 601, may be obtained from **The Flintkote Co., 30 Rockefeller Pl., New York 20, N. Y.**

INSULATED PORCELAIN ENAMEL PANELS—Seaporclad panels are of sandwich construction with skins of diversified metals laminated under high pressure to fire-resistant, thermal and sound-insulating cores. The product is available with two faces of porcelain enameled steel or with one porcelain side and one opposite skin of another sheet metal material. They can be used to provide single exterior-interior walls, as a veneer, ashlar, permanent or removable partition, and are described completely in an 8-p technical bulletin. The booklet outlines properties of the new insulated panels, provides seven detail drawings showing possible installation methods and describes its use in the construction of a hospital and school building in particular.—**Seaporcel Metals, Inc., 28-20 Borden Ave., Long Island City 1, N. Y.**

ACUSTI-LUMINUS CEILINGS—offer glareless, shadowless, even light coupled with efficient acoustical treatment. This 8-p folder shows how hanging tracks support the translucent corrugated UL-approved plastic sheet, mounted on continuous Slimline fluorescent lights. The weight of the entire acusti-luminus ceiling is approximately 1½ lb per sq ft. Its acoustical baffle has a noise reduction coefficient of 0.90, is approximately 1 in. wide and 4 to 6 in. deep—made of 26-gage prime steel. An interesting 5-picture sequence shows an Underwriters' fire test. In this test an alcohol fire was lighted under a steel pan on a floor below a complete acusti-luminus ceiling. The plastic lost its corrugation with 140 deg of heat, softened and fell out. All of the plastic sheeting fell out in 2½ min, and the sprinklers above them took the usual 5½ min to pop off at 156 deg F.—**Luminus Ceilings, Inc., 2500 W. North Ave., Chicago 47, Ill.**

HOW MALSBARY STEAM CLEANERS SAVE DOWNTIME IN WINTER



Two men and two MALSBARY 250's clean this tractor in 35 minutes.

When King & Brenaman's tractor-scraper rigs stood overnight without cleaning in Ontario's winter weather, mud froze, caused cable breakage and costly downtime. Pick and shovel cleaning proved impractical. Then two MALSBARY 250 heavy-duty cleaners whipped the problem by completely steam cleaning the entire fleet of 47 big rigs each night in approximately 7 hours.

Another MALSBARY Model 250 in Leduc, Alberta, keeps hydrants, standpipes and sewer lines thawed out during subzero weather.

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HUBER ROLLERS — Huber rollers literally are taken apart and put together again in this 16-p, two-color folder which has chapters on the frame, gear train, guide-roll assembly, fluid coupling, clutches, dual control, clean-air cooling and ventilating, and disk-type braking. The inside rear cover lists complete specifications for both the 8-12- and the 10-14-ton models. A cutaway view of the guide roll assembly shows how four heavy struts are welded diagonally from the head at a point near the hub, across the inside of the roll to the tire at a point near the opposite head. These four struts transfer side thrusts from the tires to the rigid hubs, where they can be absorbed by the axle mounting. Each roll is fabricated by an exclusive Huber process, and the matching rolls are machined in pairs to assure accurate tracking when in operation. —Huber Mfg. Co., Marion, Ohio.

THE STORY OF HOMELITE — is the title of a 24-p book which serves as a general catalog of all the company's products. The center spread shows at a glance the complete line of the company's chain saws, gasoline and electric — gasoline - engine - driven electric plants, self-priming centrifugal pumps and gasoline-engine-driven blowers. Highly illustrated, the booklet is available from **Home-lite Corp., Port Chester, N. Y.**

STONE WORKING TOOLS — Drills, tools, goggles, portable cranes, chisels, lifting dogs and every other conceivable type of equipment used in any phase of stonework are all incorporated in a 36-p booklet made available by **Trow & Holden Co. Architects, engineers and contractors who are bothered by problems of any kind in stonework and masonry structures would do well to add this booklet to their data files. It is profusely illustrated and shows every conceivable type of tool needed in drilling, trimming, placing of masonry and stone work. —Trow & Holden Co., Barre, Vt.**

WIRE ROPE — Twenty-four pages packed with concentrated wire-rope data make up the booklet made available by the **E. H. Edwards Co.** It is condensed from the company's general catalog in order to provide wire-rope users with a concise, easy-to-read guide to every important phase of wire-rope production, purchasing, maintenance and use. Detailed drawings, charts and descriptive material based on the company's thirty years in the wire-rope business are included in the booklet. In addition to the rope itself, there are chapters on wire-rope fittings, sheave diameters, the problem of sheaves in general, and lubrication and storage. —**E. H. Edwards Co., Butler Rd. and Industrial Way, S. San Francisco, Calif.**

BASIC UNITS FOR CRUSHING PLANTS — This 16-p bulletin published by **Pioneer Engineering Works, a subsidiary of Poor & Co.,** explains the purpose, features and specifications of Pioneer crushers, feeders, conveyors, vibrating screens, revolving screens, scrubbers, dehydrators, bins and related units. Entitled "Basic Units," it is of particular interest to quarry, mine and cement plant operators. —**Pioneer Engineering Works, Inc., 1515 Central Ave., Minneapolis 13, Minn.**

CONCRETE SURFACE HARDENER — Tests have proved that the bottom surface in a monolithic concrete slab is generally 25%, or more, harder than the top surface, depending on thickness, richness of mix and the slump. The quality of concrete is not uniform from bottom to top because the heavy abrasion-resistant aggregate sinks to the bottom. This booklet explains how Plastiment promotes uniformity of quality through the slab by increasing adhesion of the cement-water paste to the aggregates. It also is said to increase top surface hardness over 25% and to reduce cracking in the slab as the result of tensile stresses. This 4-p folder explains how Plastiment retards setting rate of concrete and helps to reduce or eliminate cracking. —**Sika Chemical Corp, 35 Gregory Ave., Passaic, N. J.**

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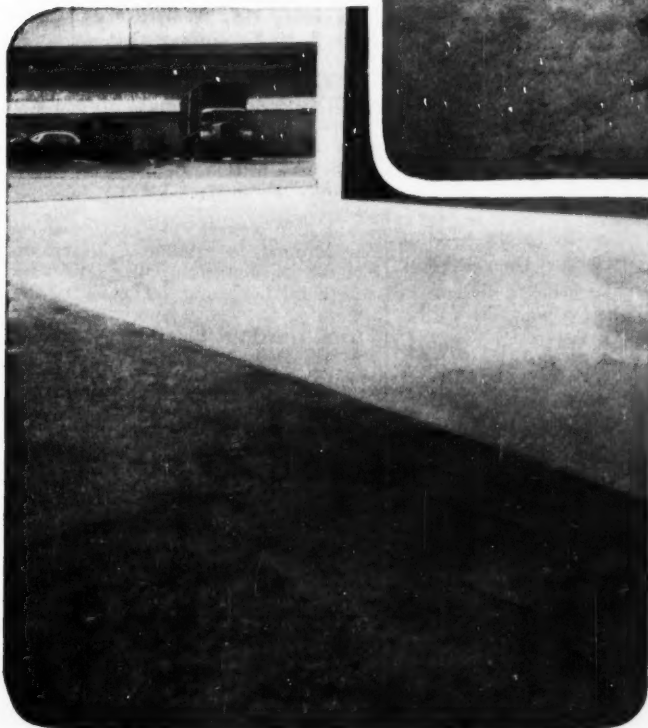
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GALION HYDRAULIC HOISTS—There are 15 hydraulic hoists in the complete line of Galion's new series. Each one has its own bulletin covering full specifications for one individual hoist. Each bulletin contains data on hoist type, weight, stroke, cylinder diameter, mounting height, dump angle and piston-rod diameter. Each is profusely illustrated with large close-up hoist photos and application pictures. Hoist pumps are shown in detailed, cut-away form. —The Galion Allsteel Body Co., Galion, Ohio.

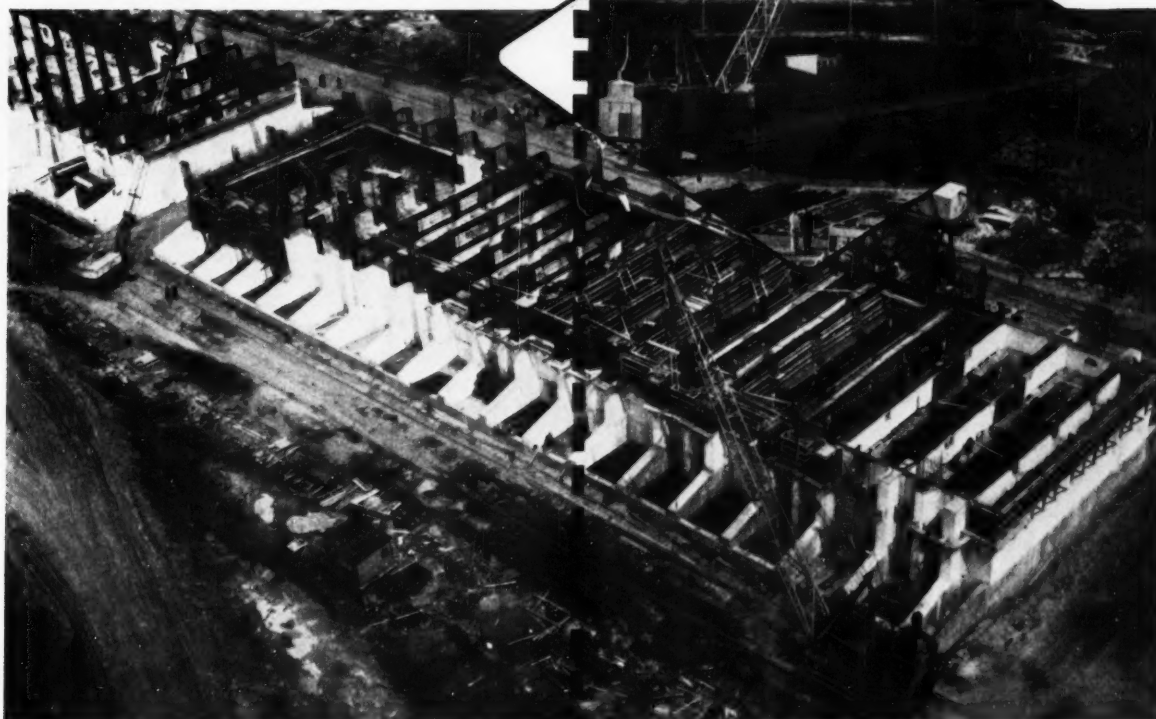
KNOW YOUR CARBURETOR—is the title of a 46-p carburetor handbook written by the Research Staff of the Gumout Div., Pennsylvania Refining Co. The new booklet, profusely illustrated, is particularly pointed to the man who has not had extensive training in carburetor servicing. It describes, in non-technical language, the basic theory of the carburetor, its various parts, and the common carburetor troubles usually encountered and how to correct them. —Pennsylvania Refining Co., 2686 Lisbon Rd., Cleveland 4, Ohio.

DEMICON LIQUID FLOOR HARDENER—Among the satisfied users of this concrete floor hardener are such important names as the General Motors Corp., Port of New York Authority, Chrysler Motor Car Co., Colgate-Palmolive-Peet, Ford Motor Co., and several others. Made up in question-and-answer form, a complete 12-p booklet explains how this entirely alkaline hardener and sealer is made and applied. —Demarest Engineering Co., 790 Broad St., Newark 2, N. J.

FLEXIBLE METAL HOSE AND TUBING—American flexible metal hose and tubing, manufactured by the American Brass Co., is the subject of a 16-p illustrated "quick reference" catalog. The products are made in two basic types—seamless and strip wound. The catalog shows wide range of available alloys and sizes, suggested applications, and data on hose and fittings. Labeled Catalog CC-400, it is available from The American Brass Co., American Metal Hose Branch, Waterbury 20, Conn.

STEEL SASH AND CASEMENTS—Two booklets—one is a 12-pager which describes the company's Lok'd Bar steel sash—the other is a 32-pager describing the remaining products made by the company, including doors, glass block windows, picture windows, casements, security windows. The former shows in part the list of recent installations of Lok'd Bar windows and the latter has complete architectural drawings of the various components made by the company. —Hope's Windows, Inc., Jamestown, N. Y.

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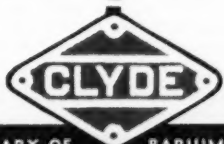
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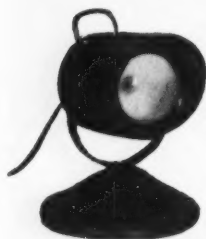
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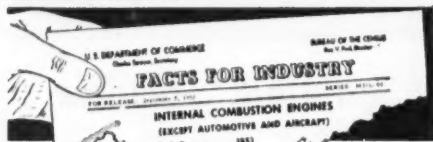
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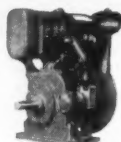
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LUBRICATION BOOKLET—A comprehensive presentation of the whys and wherefores of lubrication is provided in an attractive, well-illustrated 26-p booklet published by the Service Dept. of The Euclid Road Machinery Co. The booklet details procedures for Euclid equipment, but in addition discusses fundamentals of lubrication. Characteristics of lubricants, their properties and tests, reasons for oil and lubricant changes, proper lubrication intervals and recommended procedures are also included.—**Euclid Road Machinery Co., Cleveland 17, Ohio.**

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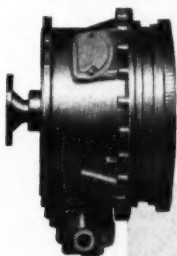
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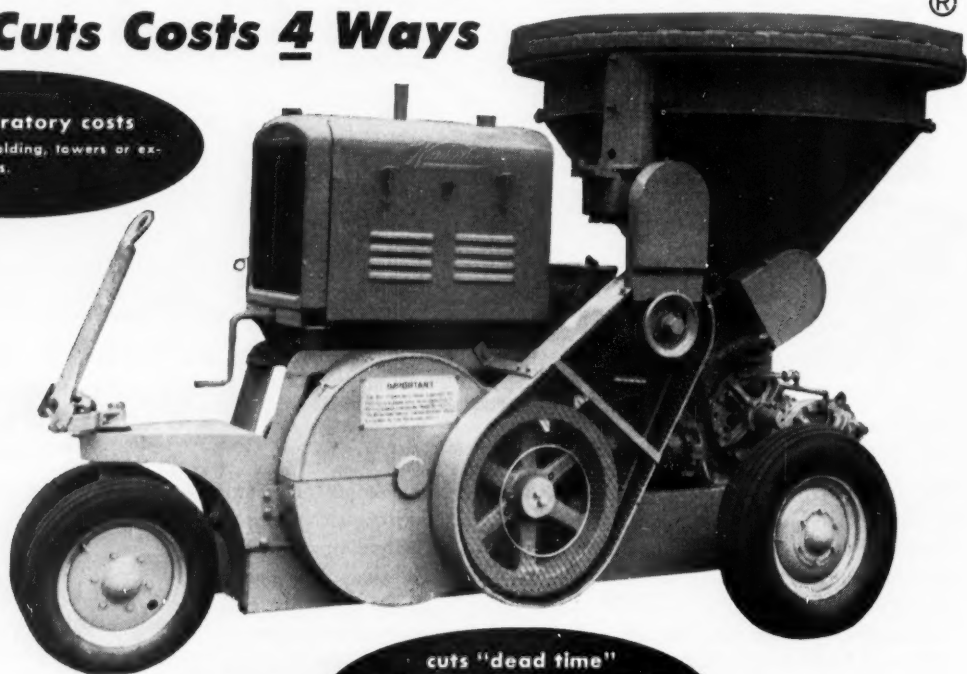
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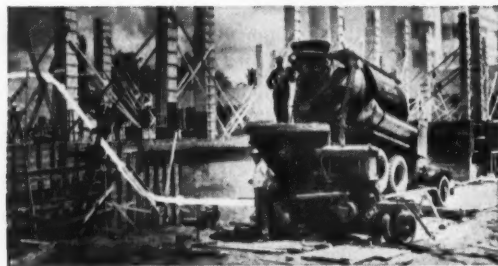
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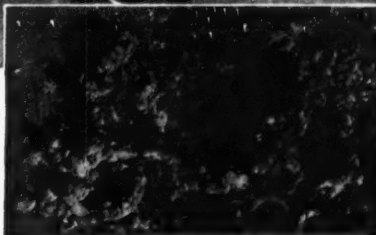
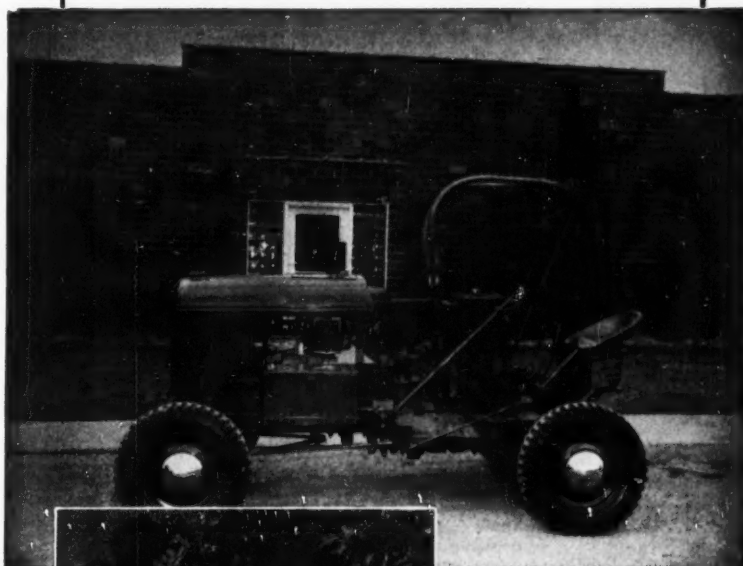
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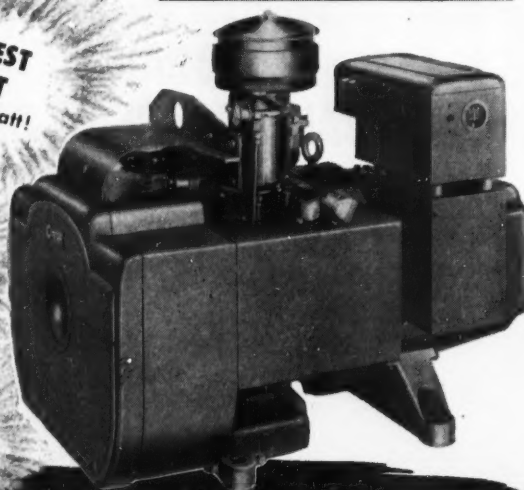
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With FORMULA NO. 640, a clear liquid which penetrates 1" plus in concrete, brick, stucco, plaster, etc. Seals out water, dirt. Holds 20' head. Use outside and in. Preserves all absorbent materials. Sold 14 years. Quick, economical, sure. \$3-in 55's. Free sample. See Sweet's. HAYNES PRODUCTS CO., OMAHA 3, NEBR.

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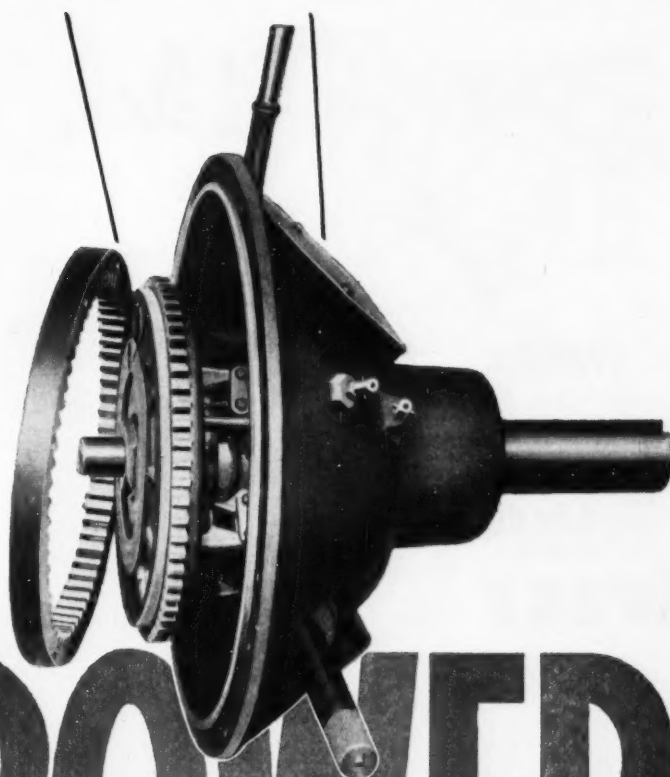
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CONSTRUCTION
Methods and Equipment

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POWER TAKE-OFF

There's more to a Twin Disc Power Take-Off than meets the eye. They last, and last, and last... because—driving and driven plates provide *positive* clamping action; slipping capacities are in *excess* of rated capacities; tolerances are *more exact*, to assure quicker, easier engaging and disengaging. And when they *do* wear out, they're backed by the fastest, most thorough service program in the field—with 60 Parts Stations, 8 Factory Branches—fully staffed and stocked. If power take-offs enter your industrial power picture, consult Twin Disc first. Call your nearest Twin Disc Factory Branch where stocks are maintained for emergency requirements.

Twin Disc Power Take-Offs are available with clutches ranging from 6.5" to 24" single-plate, from 11.5" to 24" double-plate. Housing sizes No. 6 S.A.E. to No. 00 S.A.E. Capacities up to 650hp. Write for complete specifications, Bulletin No. 129-C.

Built for a Long Life . . .

Backed for a Lifetime

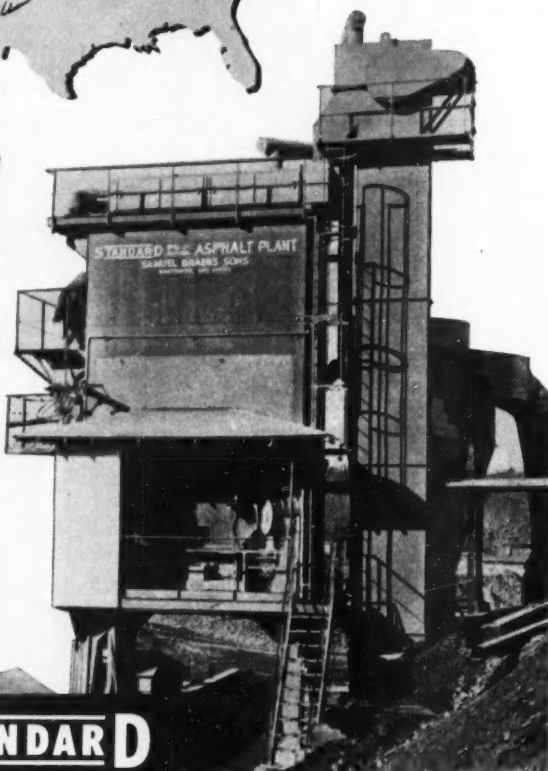


TWIN DISC CLUTCH COMPANY, Racine, Wisconsin • HYDRAULIC DIVISION, Rockford, Illinois

BRANCHES: CLEVELAND • DALLAS • DETROIT • LOS ANGELES • NEWARK • NEW ORLEANS • SEATTLE • TULSA



**WHERE
EAST
LIKES
WEST**



**STANDARD
RB
ASPHALT PLANT**

4000 pound plant of Samuel Braen's Sons,
Hawthorne, New Jersey

**12 sold in Atlantic Coast states alone
in less than one year**

"California made" Standard RB Asphalt Plants really must have something to make East Coast operators "buy 'em by the dozen". That something is balanced performance which gives the RB its profit-making extra capacity. You just breeze through tremendous tonnages with a STANDARD PLANT because there are none of the usual bottlenecks. Extra large dryer capacity and oversized elevators, extra large vibrating screens and air handling systems all contribute to smooth, synchronized performance. Write for illustrated Bulletin No. 525 and see for yourself what makes the Standard RB now America's fastest selling asphalt plant!

UNIT BUILT—8 SIZES, 500 to 6000 POUND CAPACITIES



STANDARD

STANDARD STEEL CORPORATION

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SEARCHLIGHT SECTION

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We are seeking a top-flight man, under 40, who is anxious to assume real responsibility with a leading manufacturer of heavy earth-moving equipment. He will probably be a college graduate in civil or mechanical engineering, who has had five years of sales or field experience around earth-moving equipment. He wants to tackle the big jobs; road-building, mining, dams and air fields. He likes to contact top construction and mining men in the field. He will travel on a good salary with expenses plus a bonus arrangement to reward his initiative.

If you are this man, please send a complete description of your qualifications to

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& EQUIPMENT**

**520 N. MICHIGAN AVENUE
CHICAGO 11, ILLINOIS**

**Superintendents and Project
Managers Training Course.**

All instruction by mail. Send today for sample lesson and complete details.

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PIPE • PILING

DRAINAGE CULVERTS

REINFORCING ROAD MESH

STRUCTURAL SHAPES

COLUMBUS STEEL SUPPLY CO.

Columbus 3, Ohio University 1175

EQUIPMENT--used-surplus

FOR SALE

Attachments, Shovels, ½ yd Insley Shovel front K12 or K14, ½ yd Insley Backhoe Attachment K12 or K14, ½ yd shovel front for byers 65, Wm. C. Doherty, Inc., 52 Summer St., Stoneham 80, Mass., Tel. Sto. 60379.

Generator, Diesel, 75 KW, 220/440/60/3, Cat. D-13000 Engine, Complete with all controls. Excel. shape. Save Thousands of \$\$\$\$\$\$. Contact Mr. Weber, E.C.A., 1146 So. Washtenaw, Chicago 12, Ill.

Pile Hammers: Two new Vulcan 50-C; one new Vulcan No. 1. Day & Maddock Co., 8201 Almira Ave., Cleveland 2, Ohio.

Scraper, 3 to 5 yd LaTourneau, cable. Wm. C. Doherty, Inc., 52 Summer St., Stoneham 80, Mass., Tel. Sto. 60379.

Scraper 8 yd Heil, Hydraulic, A-1 condition. Wm. C. Doherty, Inc., 52 Summer St., Stoneham 80, Mass., Tel. Sto. 60379.

Shovel, 1¼ yd. Lorain 75B, with Cummins Diesel Motor. Wm. C. Doherty, Inc., 52 Summer St., Stoneham 80, Mass. Sto. 60379.

MISCELLANEOUS

Instruction Manual

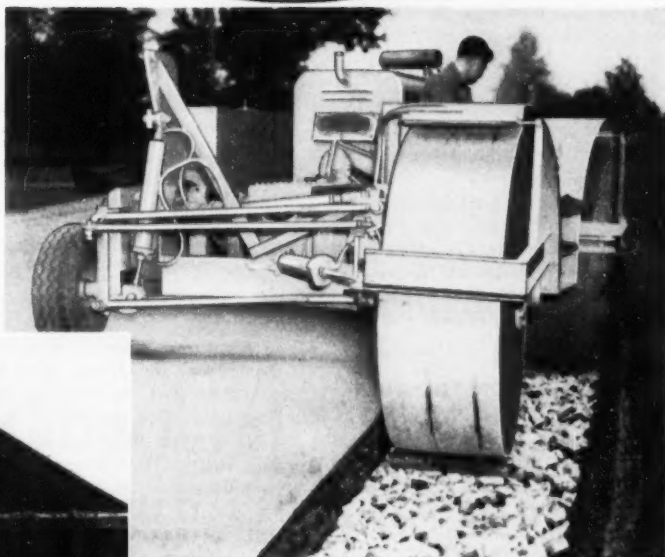
High-Ball retreading of U-bolts Instructions \$1.00 Can. George Stadel, Finlayson Ave., Victoria, B.C.

You're miles ahead if you
Team up with this



The Apsco Road Widener (below) has many firm friends in the contractor fraternity. Demonstrated savings, better than average results — are two of the important reasons.

And now the Dual Compression Trench Roller which greatly increases opportunities for economy in road widening. Together they make a winning team that puts you ahead — in both miles and money.



CONTRACTORS AND ENGINEERS Staff Photo

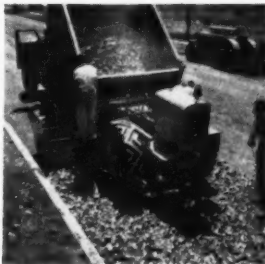
↑ Unique design of this Dual Compression Trench Roller permits rolling 20" to 39" at one pass, or, by putting rolls "in-line", gives, in effect, two rollers in one. Think of the savings — in time and money!

↑ This APSCO Widener helps speed the building of New Jersey turnpike at the rate of 150 to 200 tons of aggregate per hour. Note that **no forms are required!** Same is true when this machine lays concrete.

BITUMINOUS PAVER FINISHERS, BASE PAVERS, ARE ALSO ON THE WINNING TEAM



Bituminous Paver Finisher, mounted on rubber, is showing some startling results.



Model P-120 Base Paver is smaller but still efficient.



Model P-125 can readily handle 150 tons per hour — in depths up to 11". Excellent results. No forms required!

See the APSCO distributor nearest you or write the factory — now!

ALL PURPOSE SPREADER CO.



ELYRIA, OHIO

Methods Memo . . .

LET'S REARRANGE the hours, is the plea of British building trade employers. Britain's construction men have an 8-hr day in winter the same as in summer, although it is claimed that up to $\frac{3}{4}$ hr is lost daily due to early darkness.

Contractors are asking workers for a change in the rules to permit a shorter day in the winter months and a longer day in the summer (without overtime penalties) to balance out the whole year and keep annual production up. Employers are trying to impress upon union leaders that unless building costs are cut, many types of construction will be priced out of the market.

COURSES ON CONSTRUCTION are becoming more common these days in what appears to be an encouraging trend toward greater recognition of the construction industry in our national economy.

New York University, New York City, offers for the spring semester a new course entitled "Business Problems of Building Construction." It is designed for contractors, engineers, management and others engaged in construction who are concerned with the business and legal ends of a company.

The Newark College of Engineering, Newark, N. J., has scheduled a series of eight lectures and discussions on prestressed concrete for the month of April.

PLYWOOD FORMS appear to be playing an increasingly important part in the construction of large concrete structures. Their use has been shown repeatedly in connection with jobs described in CM&E.

The Douglas Fir Plywood Association reminds us of another big job, construction of the Alaskan Way Viaduct in Seattle, Wash. (CM&E April 1952, p. 85). Here, about 400,000 sq ft of plywood was employed for formwork. The contractor reports an average of four re-uses of the standardized panels with about 25% used seven or eight times.

WE ARE SORRY. In the November issue, beginning on page 92, we published the article "Water Main Casing Jacked Under 14 Sets of Railroad Tracks." After going to press, we discovered that the "d" had been left out of the word Rodgers—for Rodgers Hydraulic, Inc., makers of the powerful jacks used so successfully on the job.

In spite of the extra care our staff takes to get names of persons and products spelled exactly right, these things creep in.

MUNICIPAL CONSTRUCTION will get help on its special needs, if plans of the Associated General Contractors and the American Public Works Association bear fruit. A national joint committee to study matters of mutual interest has been established.

TWO MILLION ENGINES have come off the busy production lines of the Wisconsin Motor Corporation. Although not as spectacular as the powerplants in big prime movers, these small and dependable workhorses play an indispensable part in keeping even the smallest job on the go—in every conceivable type of powered equipment. The two million Wisconsin units deliver a total of 26 million hp.

PRECAST CONCRETE UNITS will supplant brick and plaster in construction of buildings within the next 25 yr. So says Roger H. Corbetta, president of the Corbetta Construction Co., which is one of the pioneers in precast concrete work.

Addressing a meeting of the Concrete Industry Board he stated, "The mounting costs of brick and plaster and the many problems encountered in building with this outmoded hand method are causing many engineers and architects to seek other mediums of construction. The answer will be found in economical precast concrete units, including complete wall sections, which can be fabricated in any shape, in any size and in any color and insulated effectively. Leaky walls will be a thing of the past."

LARGEST SINGLE CUSTOMER of the aluminum industry is the construction industry, consuming approximately one-third of the total output, according to Reynolds Metal Co., a major producer. Reynolds breaks down the uses for aluminum in construction into eight general classifications.

Their present order of importance is: Roofing and siding; windows and accessories; general construction products, such as hardware; ornamental products; prefabricated buildings; walls, partitions, ceilings, doors and store fronts and highway equipment. This order is expected to change. For instance, it is believed that walls, partitions and ceilings easily may become first or second in importance eventually.

TOO BAD, but the promising Project Adequate Roads (PAR) movement so enthusiastically launched last year seems headed for the rocks with the withdrawal of the American Road Builders Association, one of the largest participants. Four other big groups are threatening to resign. ARBA did not state its reasons for pulling out. Scuttlebutt has it that the Road Builders, as well as the other disgruntled groups, don't like the way one of the sponsoring organizations, especially one man in that outfit, is taking over apparently with the idea that PAR is a movement for all good roads enthusiasts to join this particular organization, instead of being a program to coordinate all highway promotion groups into a united front.

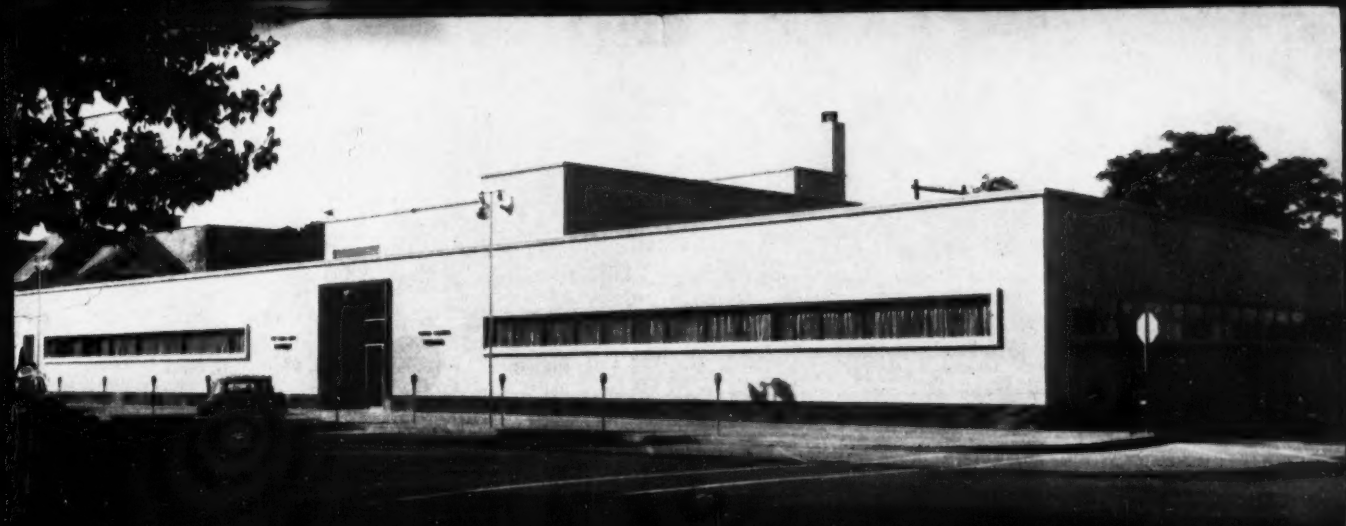
CONSTRUCTION METHODS AND EQUIPMENT

January 1953



On the Cover . . .

That rocky hill hasn't a chance of standing up against the Manitowoc 4500 5-yd shovel attacking it on the Union Pacific 42-mi., low-grade line change west of Cheyenne, Wyo. Morrison-Knudsen Co., Inc., contractor on the railroad project, is using two of these big rigs to load some $2\frac{1}{2}$ million yd of rock into Euclid end-dumps. This cut alone requires 350,000 cu yd of excavation, and some of the fills build up to 775,000 yd in embankments 170 ft high. The entire job involves $6\frac{1}{2}$ million yd of grading. Started only last spring, the new line will be ready for the U.P. Streamliners some time this coming summer. A complete description of grading and drainage operations was published in CM&E Sept. '52, p. 48.



Republic Publishing Co. Plant, Yakima, Washington. Archt.—John W. Maloney, Seattle, Wash.; Contr.—Howard S. Wright & Co. Inc., Seattle, Wash. Pozzolith Ready-Mixed Concrete supplied by Yakima Cement Products Co., Yakima, Wash.

POZZOLITH Architectural CONCRETE In Ultra Modern Publishing Plant

The excellent appearance of Pozzolith Concrete is one of the reasons for its wide use in such structures as this \$1,400,000 publishing plant, regarded as one of the finest smaller newspaper plants on the entire Pacific Coast.

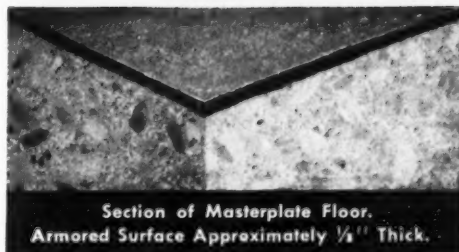
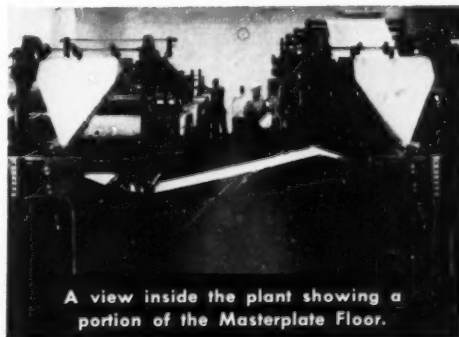
Other important advantages of Pozzolith Concrete are — easy placeability, reduced shrinkage, lower permeability, increased bond-to-steel and greater durability. These advantages are obtained more economically with Pozzolith than by any other means.

4-6 Times Longer Floor Life with MASTERPLATE FLOORS

Installation of Masterplate "Iron-Clad" Concrete Floors is further evidence of the careful planning that went into this plant.

Masterplate Floors have a thick, *ductile* surface, produced by applying Masterplate as a "shake" while concrete is still in a plastic condition. In addition to providing great wear resistance, this "iron-clad" surface makes the floor spark-safe, non-dusting, corrosion-resistant, easy-to-clean, non-slip and economical.

*Full information on Pozzolith
and Masterplate on request.*



The

MASTER



BUILDERS

Co

CLEVELAND 3, OHIO

Subsidiary of American-Marietta Company

TORONTO, ONTARIO

New 200-ton rubber-tired roller rolls on TIMKEN® bearings

THIS new 200-ton rubber-tired roller was designed and built by the Shovel Supply Company to test fills on runways for heavy jet bombers and transport planes. Designed in two halves, so that each half will oscillate independently, the giant roller is equipped with four, 3000 x 33" tires on specially built wheels.

To carry the 200-ton load safely with smooth, free-rolling action, Shovel Supply engineers specified Timken® tapered roller bearings for

the wheels. They easily carry the tremendous radial and thrust loads set up by the oscillating halves of the roller. Their tapered construction takes loads from any direction and line contact between rollers and races provides extra load-carrying capacity.

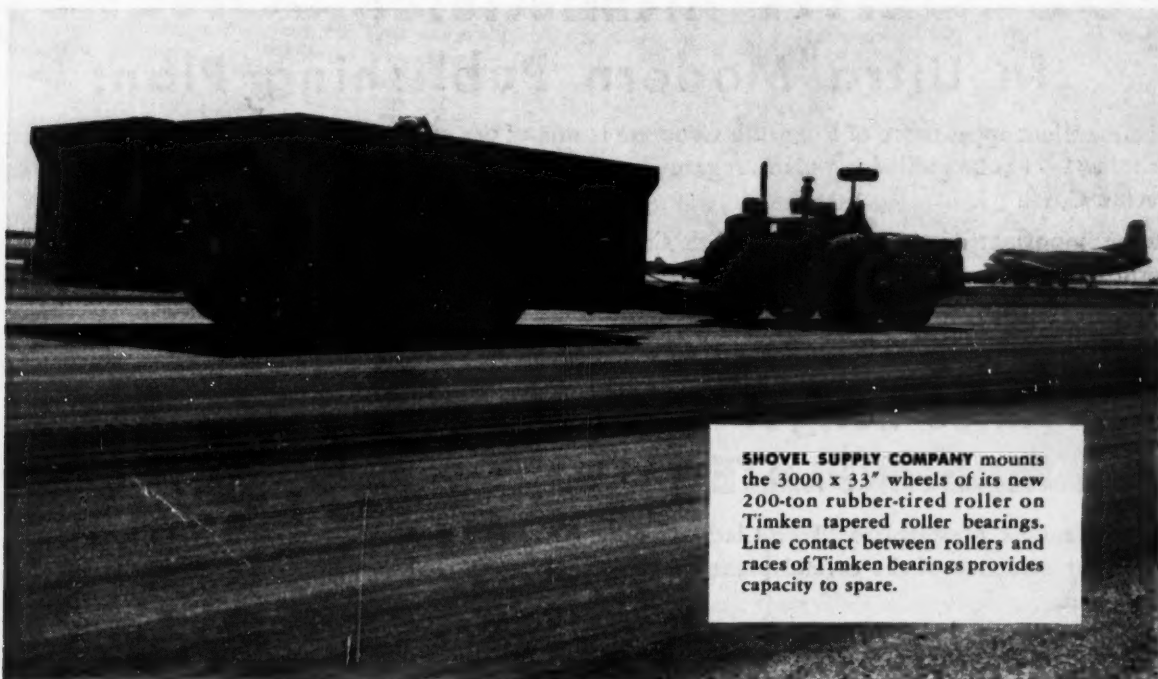
Timken bearings also prevent breakdowns or excessive wear due to the continuous shock loads that occur in an earth rolling operation. They are case hardened to have tough, shock-resisting cores and hard, wear-

resistant surfaces. Their true rolling motion and smooth surface finish minimize friction and wear.

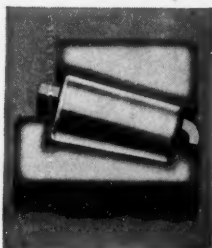
For giant machines like this, or wherever your wheels and shafts turn, be sure to specify Timken bearings. And always look for the trademark "Timken" stamped on the bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ont. Cable address: "TIMROSCO".



This symbol on a product means its bearings are the best.



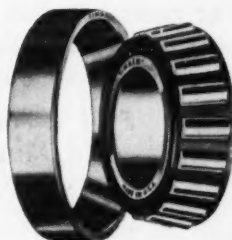
SHOVEL SUPPLY COMPANY mounts the 3000 x 33" wheels of its new 200-ton rubber-tired roller on Timken tapered roller bearings. Line contact between rollers and races of Timken bearings provides capacity to spare.



GREATER LOAD AREA

Because the load is carried on the *line* of contact between rollers and races, Timken bearings carry greater loads, hold shafts in line, wear longer. The Timken Roller Bearing Company is the acknowledged leader in: 1. advanced design; 2. precision manufacturing; 3. rigid quality control; 4. special analysis steels.

TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS



NOT JUST A BALL  NOT JUST A ROLLER  THE TIMKEN TAPERED ROLLER  BEARING TAKES RADIAL  AND THRUST  LOADS OR ANY COMBINATION 